STEEL

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By H. W. Van Loon, Courtesy Boni & Liveright.

After the Storm—

Great thing these storms—to keep us tough and weathered; to make us keep our ships in order. While there are some signs of calmer seas and clearer skies ahead, we will be wise if we continue many storm-time tactics.

In good times as well as bad occasional squalls and even tempests blow up in spite of all that can be done to squelch them. Those who know in the financial and merchandising fields seem to be agreed that the best way to be prepared for any eventuality is to maintain a low inventory and keep capital conserved for current business.

When it's steel that is needed, this is easy and practical, for you may depend upon the ten plant group of Ryerson warehouses for immediate shipment of every requirement. More than 10,000 sizes and kinds of steel and allied products are in stock to meet your rush requirements. No order is too large for immediate shipment nor too small for personal attention.

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HEAVY PLATE AND BILLET BURNING SERVICE

Bulletin No. 16 shows many examples of machinery parts, dies, circles, grilles etc. that are now cut from steel plate by Ryerson plate burning service. Write for it.

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Practically every type of gas and electric welding rod with information on analysis, characteristics and purpose of each type will be found in Bulletin 23. Write for it.

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Complete information on Cold Finished Steels including all grades from standard shafting to special accuracy stock. Non-technical explanation of what each grade is best suited for in Bulletin I.

Volume 90 Number

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

The Week In Steel

NOT in tonnage but in careers is the record of steel written, and as the death of Judge Gary in 1927 ended one phase of the United States Steel Corp. so the resignation of James A. Farrell as president, effective in April, terminates another (Page 11). Ordinarily, presidents of great corporations do not write their resignations in longhand in their homes at night; excluding speculation, it may remain for the biographers of Mr. Farrell and Myron C. Taylor, chairman of the Corporation's finance committee, to supply the reason. Mr. Farrell having anticipated by 13 months the enforced retirement that would have overtaken him in February, 1933, what matters now, both for the Corporation and the industry, is the identity of his successor.

Can Subsidiaries Produce Successor?

Napoleon visualized a marshal's baton in every soldier's knapsack. With Mr. Taylor intrenched as the "strong man" of the Corporation, it is logical for the subsidiaries to provide a running mate trained in sales or production, but the preponderance of men over 65 at the head of important subsidiaries is a complication, suggests the possibility of an outsider. Certainly, younger men will now rule at 71 Broadway. . . . Doubtless an honorary vice presidency will be tendered Mr. Farrell by the American Iron and Steel institute, and a Farrell dinner at the May meeting is in order provided he returns in time from the National Foreign Trade Council convention in Honolulu, May 4-6.

Markets Improve, Carrying Steel Rate Up

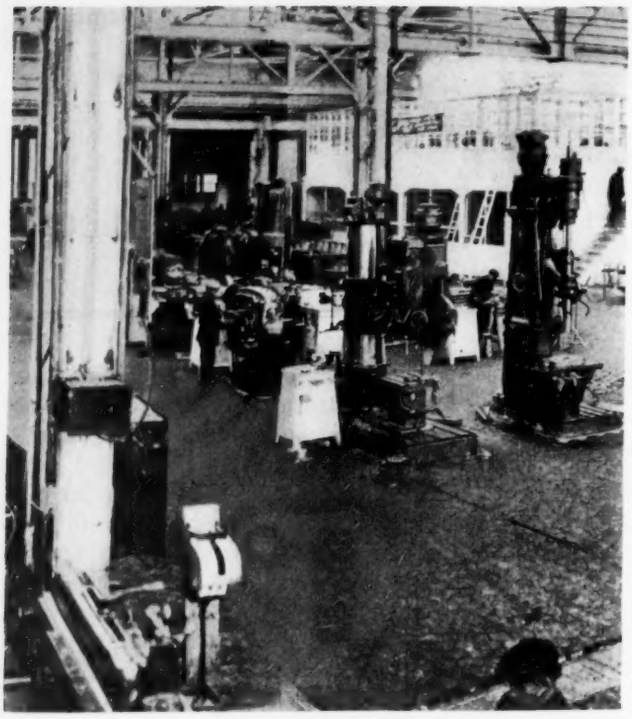
Unless the flush of the first half of January is a feverish one, whoever takes the helm of the Corporation will pilot his ship in calmer waters. Always with a reservation because the improvement in the first quarter of 1931 proved so illusory, the market situation in steel appears distinctly encouraging (page 41). Through practically every market runs a thread of slightly heavier buying, reflected in another moderate lift in the steel operating rate (page 49) to 26 per cent.

Tin Plate Outlook Is Brighter

Most spectacular, at the moment, is tin plate. Orders totaling many thousand tons are being figured (page 44) by domestic mills, while South Wales producers (page 57) have booked 40,000 tons for the Shell oil interests. . . . The Erie railroad has distributed 31,377 tons of rails (page 45); inquiry from other roads is imminent. . . . Incidentally, the department of justice report on the "pegged" price of steel rails

Courtesy, Caterpillar Tractor Co., Peoria, Ill.

Few men, little mechanism for a big job: Tractor and drag line bucket cutting a narrow shelf, for a road, on a heavily wooded mountain side in Olympic National Forest, Washington



Wide World Photo

Installing machinery in Russia's automobile plant. Patterned after Ford's at River Rouge, where soviet engineers studied, this plant is preparing to make 150,000 cars annually

is withheld (page 13) pending further investigation. . . . An adjustment in railroad wages, hinging upon the expenditure of funds saved for further repair and maintenance work (page 13), appears certain to benefit steel.

Still in Low Gear, but Moving

Slow as the automobile industry is in getting under way, the trend is right. A month ago, many manufacturers at Detroit were closed; today, all important makers are assembling, even if on light schedules (page 17). Ford is producing a few revised fours, placing some parts orders for an eight. . . . One sheet manufacturer proposes (page 55) a slogan: "Let's ride out of the valley," referring literally to the automobile industry. . . . No small portion of Russia's intended increase in steel production this year (page 13) is destined for her new automobile plants. Though 1932 schedules for steel show noteworthy expansion over 1931, there is a definite lag behind the original goal in the 5-year plan.

Unfilled Tonnage Victim of Housecleaning

How misleading the reading of statistics may be is indicated by the unfilled tonnage statement of the Steel corporation for Dec. 31 (page 16). Superficially, the Corporation's backlog went off 198,538 tons in December, to the lowest level in 22 years, yet it is understood that an increase would have been shown had not doubtful orders been dropped. . . . Those wage rates predicated upon prices—at unionized sheet, tin plate and bar iron mills, stand pat in January and February (page 16). . . . Most government production statistics now current (page 38) represent the weakness in the closing months of 1931.

Obsolescence Now Claims Materials

If equipment and methods fall victim to obsolescence, why not materials? A careful study to determine the best steel for various uses has great potentialities (page 23), turning research into decidedly practical channels at this time. Standard specifications should serve as a guide, not as a final criterion, for selecting steel. . . . Substitution of aluminous and other clay refractories for higher price materials is one way the metallurgical industry has learned (page 27) to economize. . . . A British company has introduced a special type of spectroscope (page 31) for the quick estimation of alloying elements in steel samples, revealed by breaking down into spectrum lines of an arc struck between the test specimen and an iron rod.

No Respite in Stainless Steel Research

On a free-machining corrosion-resisting steel of the 18-8 classification an eastern producer (page 26) has been granted a patent. Free-cutting qualities are obtained by the addition of about 0.3 sulphur without lowering resistance to corrosion. . . . Stability of stainless steel and aluminum against corrosion is dependent upon thin oxide films (page 29), these not being visible when in contact with the base metal, yet apparent when removed from it. . . . An alloy steel containing chromium, vanadium, tungsten, cobalt and nickel has been developed (page 25) for use in the manufacture of rolling mill plugs and piercing points for the seamless tube industry.

New X-Ray Tube Penetrates 4 Inches

Four inches of steel can conceal no secrets from a new X-ray tube (page 28) operating at more than 300,000 volts. Design of the tube has been improved, the glass is four times thicker, water cooling of the target has been increased. . . . By enclosing all current-carrying conductors in tubular steel shells filled with oil, a new type of outdoor switchgear (page 29) built for installation in the Chicago district occupies one-third the customary space, eliminates all danger of electrocution. The equipment carries 3000 amperes at 25,000 volts.

See Taylor Greater Power in U.S.Steel as Farrell Resigns

NEW YORK—Speculation over the unexpected resignation of James A. Farrell as president of the United States Steel Corp. and concerning the indentity of his successor leads to this conclusion: Myron C. Taylor, chairman of the finance committee of the Corporation, more than ever becomes the power behind the Corporation.

And by the same token, whoever becomes the running mate of Mr.

James A. Farrell

Taylor--assuming that he himself does not become president—will stand in the most strategic position of succeeding to this power in not to exceed 12 years, when Mr. Taylor must bow to the 70-year age limit which last spring he helped decree for Corporation employes.

Thus far nothing definite has emanated from headquarters of the Corporation on the matter of a new president. There is until April 18 to choose. However, it is only to be expected that widespread interest should be displayed in the post of chief executive of the country's largest producer of iron and steel.

Mr. Taylor, with training in banking and general manufacture, became chairman of the finance committee in December, 1927, following the death of Judge E. H. Gary. Originally the chairman of this all-powerful committee had authority, between meetings of the committee, to "exercise any of the powers of the committee in respect to financial affairs of the company."

Last July, the limitation of financial affairs was removed, resulting in Mr. Taylor wielding all the power of the board of directors and finance committee between meetings. It made him, in all respects, the active head of the Corporation.

In case Mr. Taylor should also assume the presidency, it is believed that a running mate to him would be titled "executive vice president." But whether this running mate be president or executive vice president, it is logical to expect that he will be a practical steel man, rising either from the sales or the production departments of the industry. In the matter of finance and general management, Mr. Taylor obviously is self-sufficient.

Many of the presidents of Corporation subsidiaries are eliminated by the factor of age. E. J. Buffington, president of the Illinois Steel Co., will be 70 on March 4, 1933; Ward B. Perley, president of the Canadian Steel Corp., on Dec. 7, 1933; J. S. Keefe, president of the American Steel & Wire Co., on Jan. 24, 1934; E. W. Pargny, president of the American Sheet & Tin Plate Co., on July 5, 1936. Under the age 65 voluntary retirement rule, all of these are now eligible to step down.

Younger Men Are Plentiful

Among the younger men most frequently mentioned are W. A. Irvin and I. Lamont Hughes. Mr. Hughes came from the Carnegie Steel Co. to New York several years ago to become vice president in charge of operations of the Corporation. Later he went back to Pittsburgh to succeed the late William G. Clyde as president of Carnegie and continues in that capacity.

Mr. Irvin some months ago was relieved as vice president of American Sheet & Tin Plate Co. and moved to the post of vice president in charge of operations of the Corporation, and he continues in that office. If an operating man is to be elevated to succeed Mr. Farrell, these men are prominently in the picture.

In addition to Mr. Irvin, four other outstanding men are vice presidents of the Corporation. If sales experience is considered by Mr. Taylor as the particular qualification, E. P. Thomas immediately would loom large. Mr. Thomas, who succeeded Mr. Farrell as president of the United States Steel Products Co., is vice president in charge of commercial matters of the Corporation and an influential figure in the steel industry.

D. G. Kerr is vice president in charge of raw materials, John Hulst vice president in charge of engineering, A. N. Diehl vice president in charge of technical matters.

One of the so-called "big three" in the Corporation for many years has been W. J. Filbert, comptroller. It is generally conceded that no man knows more about all angles of the Corporation's affairs than Mr. Filbert.

Among outstanding younger executives in subsidiary companies is F. W. Waterman, who enjoys the distinction of having made one of the longest jumps on record. Without any stops by the wayside, he went overnight from the post of general superintendent of the Gary works of the National Tube Co. to that of president of the National Tube Co.

Of practical steel men outside the Corporation, George Gordon Crawford,

Myron C. Taylor

former president of the Tennessee Coal, Iron & Railroad Co. and now the head of the Jones & Laughlin Steel Corp., Pittsburgh, has been cited. Also E. T. Weir, chairman of the National Steel Corp., Pittsburgh. But for a practical steel man it is not believed the Corporation would go outside its own ranks.

Between Mr. Taylor and Sewell L. Avery, who succeeded the late George F. Baker as director of the Corporation last July, there is a noteworthy friendship. Mr. Avery's career has been foreign to steel—with United States Gypsum and Montgomery Ward & Co.—but he possesses qualifications if a general administrator were sought.

When Mr. Farrell called reporters to his Park avenue home late Tuesday evening, Jan. 12, he anticipated by 13 months his enforcement retirement, which his attainment of 70 would have effected on Feb. 15, 1933. His resignation, written in longhand, came with-

in a day of marking the twenty-first anniversary that the elder J. Pierpont Morgan and Judge Gary notified him that he had been chosen president.

As late as Saturday, Jan. 9, in meeting with sales managers of the subsidiaries ,there was no hint of an impending resignation. Mr. Farrell was deeply touched when presented with an ink stand fashioned from a bearing from the old Rankin mill of the American Steel & Wire Co., now part of the Edgar Thomson works of the Carnegie Steel Co., where he first went to work for the Corporation.

Late last year Mr. Farrell was compelled to bow to the force of other opinions and the receding market for steel, in the matter of maintaining wage rates. In the past few years he has been outspoken, at meetings of the American Iron and Steel institute, in denouncing price cutting.

Mr. Farrell now is vice president of the institute. Posts in the institute are sometimes regarded as allofted on the basis of the company as well as the personality, and presumably some one more active in the affairs of the Corporation will assume this vice presidency. However, the precedent of John A. Topping becoming honorary vice president suggests a similar title for Mr. Farrell, who will continue as a director of the Corporation.

Extremely fond of the sea—the operation of a sailing merchant vessel is one of his prides—Mr Farrell will probably take a long vacation when the occasion of the National Foreign Trade Council meeting, May 4-6, takes him to Honolulu.

Mr. Farrell, born on Feb. 15, 1863, is a native of New Haven, Conn., where he attended the public schools until he was 16 years old. At that time misfortune in the family forced him to leave school and to get his first job, which was with the New Haven Wire Co., New Haven, now a part of American Steel & Wire Co.

Studied Despite Long Hours

Three years later he left the New Haven company and went to Pittsburgh, where in the mills of the old Oliver & Roberts Wire Co., on the South Side, he continued his occupation of wire drawer.

Though working 12-hour shifts, as was customary in the steel industry in those days, Mr. Farrell continued his studies. At the age of 21 he was promoted to a selling capacity with the company and served in that capacity for four years, resigning to go with the Hartman Wire Mills, Beaver Fall, Pa. After two years, the Hartman works was bought by the Carnegie Steel Co., and Mr. Farrel went back with the Oliver company. Later he was sent to New York as eastern representative. His next business affiliation was with the H. B. Newhall Co., jobber and exporter of wire and steel products in New York city. But Mr. Farrell had left his impress on the minds of Pittsburgh steel manufacturers and was induced by Lt. T. W. Fitch, of Braddock, Pa., a Pittsburgh suburb, who was then president and organizer of the Pittsburgh Wire Co., to return to Pittsburgh and become general manager of that company.

Later he was appointed secretary of the Pittsburgh company in addition to his duties of general manager, and in 1899 when the Pittsburgh Wire Co. was taken over in the formation of the American Steel & Wire Co., Mr. Farrell was again sent to New York, this time as foreign sales representative.

Two years later, in 1901, the United States Steel Corp. was formed from various steel units, including the American Steel & Wire Co., and Mr. Farrell was made general sales agent for the entire corporation and looked after its initial foreign trade. Under his initiative the United States Products Co., export department of the Corporation, was formed and he was named its first president in 1903.

He continued in this capacity until Jan. 11, 1911, when he was elected president of the Corporation, to succeed William E. Corey, a post he has since held.

Foundrymen's Association Announces Two Medal Awards

IN RECOGNITION of outstanding service to the foundry industry, the American Foundrymen's association announces two medal awards to be made at its annual convention in Philadelphia, May 2-5. These awards are for two of four medals established in 1920 through grants of funds by four past officers of the association.

The John A. Penton gold medal, signifying vision, will be given to L. W. Spring, chief chemist and metallurgist, Crane Co., Chicago. Mr. Spring became connected with the Crane Co. in 1906, serving first as chemist and later being placed in charge of the laboratories. In 1914, he was advanced to his present position. He is well known for his research work, is the author of a book *Non-Technical Chats on Iron and Steel* and has written many technical papers.

John A. Penton, who established the medal bearing his name, was the first secretary of the American Foundrymen's association and founder of *The Foundry*. He is now chairman of the board of the Penton Publishing Co., Cleveland.

Dr. H. W. Gillett, director, Battelle Memorial institute, Columbus, O., is named recipient of the W. H. McFadden gold medal in recognition of achievement in the foundry industry. He has been prominent in research work connected with various branches of metallurgy, including cast alloys.

From 1912 to 1924, Dr. Gillett was connected with the United States bureau of mines, but in the latter year was appointed chief of the division of metallurgy, bureau of standards, a position which he held until 1929 when he resigned to become director of the newly estab-

L. W. Spring

Dr. H. W. Gillett

lished Batelle Memorial institute.

W. H. McFadden, who established the McFadden medal, was president of the American Foundrymen's association in 1906. At present, he is president, Marland Oil Co., Ponca City, Okla.

The Business Week In Washington

WASHINGTON—By the end of this week the Reconstruction Finance Corp., the President's major relief proposal, is expected to be functioning. Preliminary conferences with party leaders in the senate assure prompt confirmation of the four lay directors who, with the secretary of the treasury, governor of the federal reserve board and the land bank commissioner will direct the flow of more than $2,000,000,000 in credit available for banks, insurance companies, railroads and farmers.

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Attorney General Mitchell, believed ready with a report on the investigation of steel rail prices, instigated by Senator Couzens, states further work will be necessary before a conclusion can be reached.

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A supplementary relief bill to assist depositors of closed banks would make $150,000,000 available through a Depositors' Relief Corp., $100,000,000 of the stock to be subscribed by the treasury and $50,000,000 by federal reserve banks from their surpluses.

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The administration continues confident that out of the negotiations started Jan. 14 at Chicago between railroad labor representatives and railroad presidents an agreement looking to a reduction in wage rates, at least for the period of the present emergency, will come. Whatever stipulations are imposed by labor will mean accelerated repair and maintenance work, certain to require the purchase of materials.

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Republicans in the senate are attempting to emasculate the Democratic tariff bill, already passed by the house, substitute definite duties on oil and copper for provisions of the bill eliminating the power of the President to raise or lower duties under the flexible provisions of the present act. There may be sufficient combined Democratic and insurgent strength in the senate to pass the house bill, but a presidential veto which cannot apparently be overridden seems certain.

General Electric Co. stockholders increased 33,323 in 1931, totaling 150,073 Dec. 31, 1931.

Soviet 1932 Goals Top 1931 But Are Below 5-Year Plan

SOVIET Russia has announced 9,000,000 metric tons of pig iron and 9,500,000 tons of steel ingots as its production objectives in the metallurgical industry for the calendar year 1932—a program regarded as refutation of claims that the 5-year plan is breaking down.

It all depends upon the viewpoint.

For 1931 the goal in pig iron was 8,300,000 tons. Actual production was approximately 4,700,000 tons, it being admitted by soviet authorities that hopes for the industry were not realized.

The schedule for 1932, therefore, is an increase of 8½ per cent over the schedule for 1931; it is almost a doubling of actual output in 1931. But—the original 5-year plan contemplated a production of 12,000,000 tons in 1932.

In steel ingots the same comparison can be made. Output in 1931 is estimated at 5,000,000 tons, contrasted with the program of 8,800,000 tons. The goal for 1932—9,500,000 tons—is a measurable expansion, but it compares with an original intention of producing 14,500,000 tons in 1932.

For Russia to make 9,000,000 tons of pig iron and 9,500,000 tons of steel ingots in 1932, after producing about half that tonnage in 1931, would be comparable for the United States, after making only 18,300,000 tons of pig iron and 25,500,000 tons of ingots in 1931, to jump up to 35,100,000 tons of pig iron and 48,400,000 tons of ingots in 1932—almost back to the 1929 record.

However, Russia claims—and with much conviction—that the chances of attaining the objectives for 1932 are better than they were for 1931 program. Inadequate transportation, a serious handicap in 1931, is being remedied. The large Magnitogorsk plant in the Urals, the Kuznetsk mill in Siberia and the Dneprostal mill in the Dnieper industrial combine should swing into production in 1932.

The soviet program for 1932 also includes the mining of 90,000,000 tons of coal, compared with an actual 66,000,000 tons in 1931, and the production of 73,000 automobiles, 1300 locomotives and 50,000 freight cars.

How Russia Progresses

In Tons

	Pig Iron	Steel Ingots
1932 Program	9,000,000	9,500,000
1931 Program	8,300,000	8,800,000
1931 Output (est.)	4,700,000	5,000,000
1930	4,933,000	5,550,000
1929	4,253,000	4,823,000
1928	3,322,000	4,206,000
1927	3,290,000	4,150,000

Production figures 1927-31 are by STEEL's London office. Ingot statistics include a small percentage of steel castings which apparently are not included in the goal for 1932. Programs for 1931 and 1932 are in metric tons; other figures are gross tons.

Russia is speeding up the mechanization of coal mines, both in underground and surface equipment. "The pace at which industry, transport and agriculture are growing creates a more insistent demand," the government states, in its monthly publication U. S. S. R. in Construction. Two-thirds of its output is from the Donetz basin, and 79 per cent of the coal there is said to be mined with machinery. The illustration shows the new steel pithead and hoist at No. 8 mine of the Stalin "combine"

Industrial Men in the Day's News

Henry F. Devens, President, Oliver Iron & Steel Corp., Pittsburgh

FOR the past 25 years he has been identified with the Superior Steel Co. and Oliver Iron & Steel Corp.

HE NOW is president of the latter company, having previously been vice president and general manager since 1923.

DURING the World War he served in the army at Washington and later at Pittsburgh in the ordnance department.

HENRY F. DEVENS, identified with the steel industry for over a quarter of a century, has been elected president of the Oliver Iron & Steel Corp., Pittsburgh. He has been with the Oliver corporation since 1923, and since January, 1930, has been vice president and general manager. As president, he succeeds B. D. Quarrie, who resigned nearly a year ago.

Born Aug. 31, 1867, at Charlestown, Mass., a son of Edward F. Devens who served as a captain in the United States Navy and for a number of years was in the merchant marine service, Henry F. Devens traces his ancestry to American origin for several generations.

He was educated in the public schools of Boston, supplemented by a course at the Boston Latin school. Immediately after his schooling he went to Colorado, where he engaged in the cattle business for five years. He went east to Stamford, Conn., and accepted a position with Yale & Towne Mfg. Co. in its foundry division. Ten years later, in 1900, when he left its employ, he was purchasing agent.

From 1900 to 1906 Mr. Devens was purchasing agent for the National Cash Register Co., Dayton, O. On the latter date he went to Pittsburgh, in the sales department of the Superior Steel Co.

When he left the Superior Steel Co. 17 years later he was a vice president of the company. In 1923 he identified himself with the Morris & Bailey division of Oliver Iron & Steel Corp., Clairton, Pa., as vice president, and when the division was sold to the American Steel & Wire Co., subsidiary of the United States Steel Corp., on June 1, 1930, Mr. Devens was elected vice president and general manager of sales of the Oliver Iron & Steel Corp.

During the World War Mr. Devens served as captain in the regular army at Washington, later being transferred to Pittsburgh in the ordnance department for the government.

He is a member of the Pittsburgh Athletic association, Pittsburgh chamber of commerce, Duquesne, Allegheny county, Fox Chapel Golf and Country clubs, all of Pittsburgh; Engineers Club of New York and the American Iron and Steel institute.

Mr. Devens finds his principal recreation in all forms of outdoor sports.

ALOIS HAUSER, assistant works manager in charge of engineering, both for the bearing factories and the steel mills since 1920, recently left the Timken Roller Bearing Co., Canton, O. In this capacity he has had charge of expansion which has taken place in these plants during the last 11 years, involving not only construction of new buildings and installation of production machinery in the bearing factories, but also the large development program which Timken has completed during the past few years in its alloy steel division.

Mr. Hauser came to the United States in 1907 after severing his connections with one of the largest steel plants in Austria. Before going with Timken he was associated with the United States Steel Corp. and Bethlehem Steel Corp. The Timken expansion program of the last few years has now been completed and Mr. Hauser plans to leave on a much needed vacation with his plans for the future at this time unannounced.

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E. M. Sparhawk, sales manager at Denver for Illinois Steel Co., Carnegie Steel Co., and other United States Steel Corp. subsidiaries, was listed by the *Denver Post* in its New Year roster of "Builders of Greater Denver."

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E. L. Benedict, vice president, National Steel Fabric Co., Pittsburgh, has announced the following appointments effective Jan. 1: C. B. Dugan as district manager of the Los Angeles office at 607 Richfield building, and H. M. Wilson as district manager of the Chicago office at 1118 Straus building.

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F. L. McManus was appointed vice president in charge of traffic of the General Refractories Co., Philadel-

phia, at a meeting of directors Dec. 28. D. M. Thorpe was made vice president in charge of sales, and L. Tschirky vice president and assistant to the president.

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Harold E. Long has been appointed vice president in charge of purchases for Nash Motors Co., Kenosha, Wis.

□ □ □

Thomas F. Maher, formerly vice president and general manager, Chapman Valve Mfg. Co., Indian Orchard, Mass., was recently elected president of the company.

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J. B. Nordholt and C. C. Smith, formerly of the Toledo Steel Casting Co., Toledo, O., have been elected vice presidents and directors of Industrial Steel Casting Co., Toledo, O.

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Eric Wisbrun, formerly research engineer, Perfect Circle Co., Newcastle, Ind., has been placed in charge of the chemical and physical laboratory of the Liberty Foundries Co., Rockford, Ill.

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Henry H. Timken Jr. has been made assistant to the president of the Timken Steel & Tube Co., Canton, O. He has been assistant works manager of the Timken Roller Bearing Co., Canton, for two years.

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Henry Moulton, mining engineer, New York, was elected vice president of the Mining and Metallurgical society, New York, at its annual meeting recently. Percy Barbour was elected secretary-treasurer.

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Rufus E. Zimmerman, assistant to vice president, American Sheet & Tin Plate Co., Pittsburgh, has become associated with Columbia Steel Corp., San Francisco, also a subsidiary of United States Steel Corp., New York.

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J. D. Harrison, district manager of the Chicago office from 1922 to 1929 for Combustion Engineering Corp., New York, was reappointed to that position effective Jan. 1, with offices in the Bankers building, Chicago.

Hugh R. Carr, whom Mr. Harrison succeeds in Chicago, has been transferred to the sales department of the home office at New York as manager of stoker sales.

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E. G. Stedman has resigned as superintendent of the open-hearth and electric furnace departments of the Timken Steel & Tube Co., Canton, O., effective Jan. 1, after having been connected with the company for the past 14 years.

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Chester H. Lang, formerly assistant manager of the publicity department and then comptroller of the budget of the General Electric Co., Schenectady, N. Y., has been appointed manager of the publicity department to succeed Martin P. Rice, who retired Dec. 31 after more than 37 years of service with the company.

□ □ □

William L. Heppner, Cleveland, has been named foundry supervisor and sales representative, Banner Machine Co. plant, Columbiana, O., by the National Rubber Machinery Co., Akron, O. Mr. Heppner was formerly with C. C. Kawin, Chicago, as foundry advisor and more recently with the Euclid Foundry Co., Cleveland, as foundry superintendent and sales representative.

□ □ □

T. H. Wickenden, since 1922 in charge of development work in the automotive and aeronautical fields, International Nickel Co., New York, has been appointed assistant manager of development and research.

H. J. French, for the past three years a member of the company's laboratory research staff at Bayonne, N. J., has been transferred to the development and research department at New York to take charge of development work in steel and iron.

□ □ □

Harold S. Falk, vice president and general works manager, Falk Corp., Milwaukee, has been elected a director of the Heil Co., Milwaukee, manufacturer of welded steel products. He succeeds the late George P. Miller.

Mr. Falk is a nephew of Gen. Otto H. Falk, president of Allis-Chalmers Mfg. Co., Milwaukee, and of Herman W. Falk, president of the Falk Corp., the latter also being a member of the Heil company board and senior vice president.

□ □ □

R. A. Clark has been appointed New England representative for Baker-Rauling Co., Cleveland, with headquarters at 260 Park Square building, Boston.

Frank E. Witte at 1061 Howard street, San Francisco, has been appointed sales and service representative at that point for the Baker company.

H. S. Fuller has been named representative for the company at 810 Terminal Sales building, Seattle.

□ □ □

Charles B. Jahnke has resigned as director of engineering, Fairbanks, Morse & Co., Beloit, Wis. His future plans have not been announced. He was graduated from the mechanical engineering course of the University of Illinois in 1910 and shortly afterward joined the Beloit works engineering staff. In 1922 he was advanced to chief engineer of the Beloit works in charge of design and research, and in 1924 he was appointed general manager. Two years later he was placed in charge of all engineering. Mr. Jahnke is especially noted for his development of diesel engine design.

Obituaries

J. T. MOLTRUP, 61, president of the Moltrup Steel Products Co., Beaver Falls, Pa., died Jan. 13 at his home in that city. He helped to organize the Standard Gage Steel Co., Beaver Falls, which later was merged with the Union Drawn Steel Co., now a part of the Republic Steel Corp., Youngstown, O. In 1914 Mr. Moltrup, with his brother, the late Stephen Moltrup, founded the Moltrup Steel Products Co., producer of cold-drawn steel, shafting and foundry flask plates.

□ □ □

Herbert W. Woodward, 62, for many years general manager of the American Tool & Machine Co., Boston, died recently at Braintree, Mass.

□ □ □

John E. Angstrom, former official of the Bethlehem Shipbuilding Corp., Elizabeth, N. J., with that company for more than 30 years, died at his home, Roselle Park, N. J., Jan. 1.

□ □ □

Gilbert W. Goodridge, 57, first vice president, Bead Chain Co., formerly assistant manager of the Bryant Electric Co., Bridgeport, Conn., died at Bridgeport Jan. 5.

□ □ □

Otto Konigslow, 81, president of the Otto Konigslow Mfg. Co., Cleveland, maker of sheet metal stampings and automotive parts, died at Cleveland, Jan. 3. Born at Cleveland, he established his stamping company 50 years ago.

□ □ □

Bradish P. Morse, 60, treasurer of the Morse Bros. Machinery & Supply Co., Denver, died Dec. 27. Mr. Morse was president of several mining companies in Colorado, and vice president of the Tennessee Central railroad and general manager of the Nashville Industrial Corp., Nashville, Tenn.

□ □ □

Fred Hoffmann, 60, president, Hoffmann & Billings Mfg. Co., Milwaukee, manufacturer of plumbing fixtures, died Jan. 1. He was born in Milwaukee and became identified with the company, founded by his father in 1857, as a youth. Upon his father's death in 1894 he became president.

□ □ □

George E. Abbott, 67, president, Abbott Ball Co., West Hartford, Conn., died Jan. 2. Born at Gananoque, Ont., Mr. Abbott went to New Britain, Conn., in 1890 and became superintendent of the New Departure ball bearing plant at Bristol from 1896 to 1908. He later organized the Abbott Ball Co., manufacturer of steel ball bearings.

□ □ □

Hamilton L. Lindsay, president of the Lindsay Wire Weaving Co., Cleveland, died Jan. 8 at Cleveland.

(*Concluded on Page* 55)

Here and There in Industry

CROOKE, BURNETT & CO., York, Pa., comprising a foundry and pattern, machine, plate, structural and welding shops, offering a service for the design and manufacture of special machinery, foundry products, machined parts and the fabrication of plate and structural steel, has been opened by Leonard Crooke and W. J. Burnett. Paul G. Koch, 50 Church street, New York, will represent the company in the New York district, and the McGann Mfg. Co., 332 South Michigan avenue, Chicago, will be representative in the Chicago district.

□ □ □

Trupar Mfg. Co., Dayton, O., is establishing a branch factory at Hamilton, Ont., for the manufacture of refrigerator units and bodies.

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Halpin-Kohbry Inc., 4116 Clayton avenue, St. Louis, has been appointed exclusive distributor in the St. Louis district for Hobart constant arc welders.

□ □ □

Northern Equipment Co., Erie, Pa., has appointed the Hopton Co., 404 Denison building, Syracuse, N. Y., its representative for the sale of feed water regulators, pressure control valves, governors and similar equipment.

□ □ □

Tulsa Stove & Foundry Co., Tulsa, Okla., whose properties have been sold at bankrupt sale, had been producing oil and gas pipeline equipment. The property has been taken over by interests at Sand Springs, Okla., which held a mortgage. No plans have been made for operating the plant.

□ □ □

Bendix Aviation Corp., South Bend, Ind., has started production of a new seamless flexible tubing designed to withstand high pressure and temperatures to 500 degrees Fahr. It is intended to replace other forms of tubing on machinery for the conveyance of liquids and gases.

□ □ □

Western Cartridge Co., East Alton, Ill., has completed purchase of the Winchester Repeating Arms Co., New Haven, Conn. The plants will be operated separately for the present. The Winchester company has manufactured small arms, fishing tackle, skates, cutlery and other sporting goods.

□ □ □

Lukenweld Inc., a division of Lukens Steel Co., Coatesville, Pa., has appointed as its representative in Wisconsin the Welding Engineering Co., 2872 North Forty-first street, Milwaukee. In western New York it will be represented by Marvine Gorham, Jackson building, Buffalo.

□ □ □

Borg-Warner Corp., Chicago, automotive accessories, plans production of household heating elements, including copper radiators, in addition to its parts manufacture. A subsidiary will turn its experience in the manufacture of automobile radiators to the household field. The company also plans stainless steel products adapted to decorative and noncorrosive uses on buildings, automobiles and for many industrial products. A special lamination of veneering will be used as a base.

Steel Index Is Ready

The index to Volume 89 of STEEL, *for the final six months of* 1931, *now is ready for distribution. Copies will be sent to all subscribers requesting them.*

Mechanical Die & Tool Co., division of the Insulation Mfg. Co. Inc., 11-19 New York avenue, Brooklyn, N. Y., has taken over the jobbing die business formerly conducted by the Keller Mechanical Engineering Corp., Brooklyn, prior to the latter corporation being purchased by the Pratt & Whitney Co. and being moved to Hartford, Conn., as the Keller division of the Pratt & Whitney Co. The Mechanical Die & Tool Co. will conduct a general contract tool, die and mold business at the former Keller plant at 70 Washington street, Brooklyn. Some former Keller men are associated with the Mechanical company.

Sheet and Tin Plate Mill Wages Continued

Wage rates in sheet and tin plate mills having contracts with the Amalgamated Association of Iron, Steel and Tin Workers will be unchanged for January and February, due to the fact the reported sales price of Nos. 26, 27 and 28 gage black sheets was 2.40c per pound in November and December, the same as in the preceding two months. The rates will remain 7½ per cent above base. Following is a comparison of price averages and wage changes:

Nov.-Dec.	2.40c	unchanged
Sept.-Oct.	2.40c	unchanged
July-Aug.	2.40c	—3 per cent
May-June	2.50c	—4.5 per cent
March-April	2.65c	+1.5 per cent
Jan.-Feb., 1931	2.60c	—3 per cent
Nov.-Dec.	2.70c	—1.5 per cent
Sept.-Oct.	2.75c	unchanged
July-Aug.	2.75c	—4.5 per cent
May-June	2.90c	unchanged
March-April	2.90c	—4.5 per cent
Jan.-Feb., 1930	3.05c	unchanged

Bar Iron Mill Wage Rates Are Unchanged

Wage rates in bar iron mills having contracts with the Amalgamated Association of Iron, Steel and Tin Workers will be unchanged in January and February from the levels in the past two months, the average sales price of bar iron in November and December remaining at 1.65c. Puddlers will continue to receive $10.05 per ton. The average sales price for 1931 was 1.66c, compared with 1.84c in 1930 and 2.00c in 1929, as shown by the following:

	1931	1930	1929
Jan.-Feb.	1.70c	1.95c	2.00c
March-April	1.70c	1.90c	2.00c
May-June	1.70c	1.90c	2.00c
July-Aug.	1.70c	1.80c	2.00c
Sept.-Oct.	1.65c	1.80c	2.00c
Nov.-Dec.	1.65c	1.70c	2.00c
Yearly average	1.66c	1.84c	2.00c

Adjustment Causes Loss in Steel's Unfilled Tonnage

Unfilled orders of the United States Steel Corp. as of Dec. 31 declined 198,538 gross tons to a total of 2,735,353 tons, the lowest since 1910, but it is understood that there would have been an increase had not the Corporation stricken from its books considerable tonnage of a doubtful character from the standpoint of early specifying. In normal years, the booking of rail orders in December more than neutralizes the adjustment of obsolete tonnage. A comparison follows:

1931			
Jan. 31	4,132,351	188,755+	4.78+
Feb. 28	3,965,194	167,157—	4.04—
Mar. 31	3,995,330	30,136+	0.73+
Apr. 30	3,897,729	97,601—	2.24—
May 31	3,620,452	277,277—	7.11—
June 30	3,479,323	141,129—	3.89—
July 31	3,404,816	74,507—	2.14—
Aug. 31	3,169,457	235,359—	6.91—
Sept. 30	3,144,833	24,624—	0.77—
Oct. 31	3,119,432	25,401—	0.30—
Nov. 30	2,933,891	185,541—	5.94—
Dec. 31	2,735,353	198,538—	6.77—

Northwest Magnesite Co., Chewelah, Wash., is producing about 200 tons of magnesite daily. J. C. Hutchinson is general manager.

MIRRORS of MOTORDOM

DETROIT

FORD is beginning to assemble its revised 4-cylinder model. At Dearborn, production has been averaging about 50 units daily, while shipments of parts to more than 30 outside assembly plants have been sufficient to bring weekly output up to 1600 units last week. Thus far only closed models have been assembled.

Meanwhile, there appears to be no letdown in the effort to expedite the proposed Ford eight. From the production of certain parts, there are indications that final decisions have been made. Most of these part orders have been placed in the Detroit and Cleveland districts. Small lots of steel also have been awarded by Ford.

Ford obviously continues a drag on sales in the low-price field, many prospective buyers wanting a look at the new Fords before making any commitments, but Chevrolet, now the leader in this field in point of current assemblies, has accelerated its program. Last week its output was between 8500 and 9000 units.

Hint Chevrolet Changes

Chevrolet is credited with having an open mind. In the past it usually has followed Ford in the presentation of new models, but this year delay by Ford compelled Chevrolet to come out first. Its 1932 line is a refinement, both in body and motor, of the 1931 line. But in retooling for the changes Chevrolet is understood to have prepared for radical developments to meet the then unknown competition from Ford.

Some maintain that if Ford brings out his eight, as appears certain, Chevrolet will change its line in midsummer. Just as the last chassis of the 4-cylinder series was engineered for a 6-cylinder motor, so the present 6-cylinder series is believed to be strong enough to take an eight.

Then, too, Chevrolet has been doing considerable experimenting. One report is that front-wheel drive is being studied, another that an air-cooled motor is being built. All automobile engineering departments are continually working on "something new," and these experiments may mean much or nothing.

Irregular as production schedules are, no important manufacturer is completely down, which in itself represents considerable improvement over December. Chevrolet, as noted, is the leader at present with 8500 to 9000 units weekly. Buick is assembling 3040 units weekly, Plymouth 2150, Willys-Overland 2100, with Ford, Studebaker, Chrysler all just above the 1500-mark.

Auto Output Increases

In all, assembly lines in 26 plants making passenger cars and trucks accounted for an output of over 30,000 models for last week. The industry is back to a level, thereby, that it has not touched since early October.

Chrysler's production is expanding most rapidly in its lower price lines. With DeSoto's eight discontinued and increased schedules on Plymouth, Dodge and Desoto—all now using the Plymounth discovery of "floating power"—the Imperial lines of Chrysler itself have been adversely affected.

Franklin, at Syracuse, N. Y., will start production on a 12-cylinder car in the spring. Marmon also is about the invade this field. Thus, these two will augment present twelves from Cadillac, Lincoln, Packard, Auburn and Pierce-Arrow.

Durant, in a creditors' committee hands, will spring a surprise about Feb. 1 when it will announce an eight. This will supplement its present six.

Rockne recently went into its first regular assembly at the South Bend, Ind., plant of Studebaker. As yet only some manufacturing operations have been done at the rehabilitated Detroit plant of Studebaker intended for the Rockne. Slightly over 1000 model "75" Rocknes were assembled last week. Production on the "65" series will not get under way until early February.

Graham is working at its best rate in some months making 125 cars a day last week. Several rush shipments have been received.

About 75,000 miles of wire and steel tubing went into the manufacture of automobile wire wheels in 1931.

With 1931 total automobile and truck production estimated at 2,378,200, and assuming only an average of four wheels to each of this number, wheel output neared the ten million-mark. Of this amount, approximately 80 per cent was wire and other steel.

For each wheel about 20 to 25 feet of wire or tube is required, though the number of spokes varies according to many different designs. When solid wire is used it most nearly always is around ¼-inch thick.

One of the large Detroit wheel makers, Budd Wheel Co., reports that in 1931 it alone used over 4000 miles of wire, and of course a tonnage of tubing in addition for making steel, artillery, and other types.

However, wire and tubing tonnages for wheels may show a trend to diminish with 1932 design pointing toward smaller wheel diameters and larger tires.

New Brake Drum Popular

Motor Wheel Corp., Lansing, Mich., plans to make 1,250,000 new "centrifuse" combination cast-iron and steel brake drums in 1932. . . . Lycoming Mfg. Co., Williamsport, Pa., a subsidiary of Cord Corp., recently stepped up foundry production on automobile and aircraft engine parts so that pourings have been as high as 150 tons daily. . . . A Detroit contractor is doing some foundation work inside the Chevrolet Motors forge plant here. . . . Pontiac is shipping on a recent order for 1000 taxicabs from Terminal Cab Corp., New York.

EDITORIAL

Reconstruction Finance— Its Effect on Industry

AS THIS is being written the bill to establish the Reconstruction Finance Corp. has been approved by the senate and is before the House of Representatives for its consideration. According to present indications, no serious delays will be encountered and the new agency probably will be in operation before many weeks have passed.

General interest in this latest move of the government to ease the business situation falls short of what it should be for the reason that the public has grown skeptical of plans of all kinds—especially while they are in the stage of incubation. The attitude of the man in the street is to wait for tangible results before displaying his enthusiasm.

Nevertheless the projected Reconstruction Finance Corp. is worthy of close attention because its influence will be extended directly or indirectly to practically every branch of business activity. It is a far more important and ambitious program than the National Credit Corp., which has to its credit the averting of an acute panic but whose scope of activity has been limited.

Affords Resources of Two Billion Dollars To Bolster Financial Institutions

The plan for the Reconstruction Finance Corp. has been altered somewhat from the original conception of it outlined by President Hoover. The capital of the corporation will be $500,000,000 furnished by the United States government, but the new body will be empowered to issue obligations not to exceed an additional $1,500,000,000, so that in reality the plan embraces potential resources of $2,000,000,000.

It was the hope of some of the advocates of the project that the corporation's obligations —in the form of bonds, short term notes, etc.— could be made eligible as collateral for rediscount by Federal Reserve banks. But opposition to this feature, resulting largely from the leadership of Senators Glass and Bulkley, caused the bill to go through the senate with the provision that the obligations of the corporation cannot be purchased directly by Federal Reserve banks. However, there is nothing to prevent the United States treasury from purchasing the bonds or notes and in turn issuing government securities to raise the necessary money. Banks could buy these securities and take them to the Federal Reserve banks where they would be accepted as eligible collateral for loans. This roundabout feature may have certain virtues in controlling the degree of inflation.

Administration of the plan will be in the hands of seven directors, including the ex-officio positions the secretary of the treasury, the governor of the Federal Reserve board and the commissioner of the Federal Farm Loan board. Four others are to be named, but no more than four of the seven can be from one political party. This maneuver—the only one in which politics has appeared in the negotiations—means that three of the four directors to be named must be Democrats.

Many safeguards have been provided against careless use of the corporation's resources. Loans are restricted to projects already covered by bank financing. New expansion of industry will not be helped directly by the plan. Certain provisions for agricultural credit are incorporated in the bill and railroads, unable to secure private loans, may indulge in restricted financing through the corporation providing they first obtain approval from the interstate commerce commission.

Without going into further detail, it may be said that the dominant purpose of the Reconstruction Finance Corp. is to bolster the financial institutions of the country. In one sense it is an inflationary measure, but one with a number of safety valves to prevent inflation from getting out of control.

Influence on Industry Will Be Indirect; Hope Lies in Better Sentiment

It is too early to predict what its effect on the steel industry will be. No direct result can be expected. At best the influence will have to seep gradually from an improved banking situation and through the channels of business until it reaches the industry. Those in the front rank who will be affected first are banks, trust companies, insurance companies, building and loan associations, certain farm credit organizations and railroads. If the plan helps these institutions in accordance with expectations, then the financial stringency of the moment should be somewhat relieved. This would speed up the machinery of credit and probably lift the ban of fear which is responsible for the present financial congestion.

THE BUSINESS TREND

Business Shows Signs of Slight Improvement

STATISTICS for December now appearing make it possible to add up the totals for 1931. The results in most cases are close to estimates, but in certain barometers the recessions in the final month were greater than anticipated.

The annual output of steel ingots had been estimated at around 25,000,000 tons. The December figures of the American Iron and Steel institute show the total for the year to be 24,900,195 tons as compared with 39,286,287 in 1930. Average percentage of operation during the year was 37.69 as against 63.09 in 1930. The low daily rate for steel ingots in December—amounting to 50,092 tons—still was well over the low point of 36,713 tons established in July, 1921.

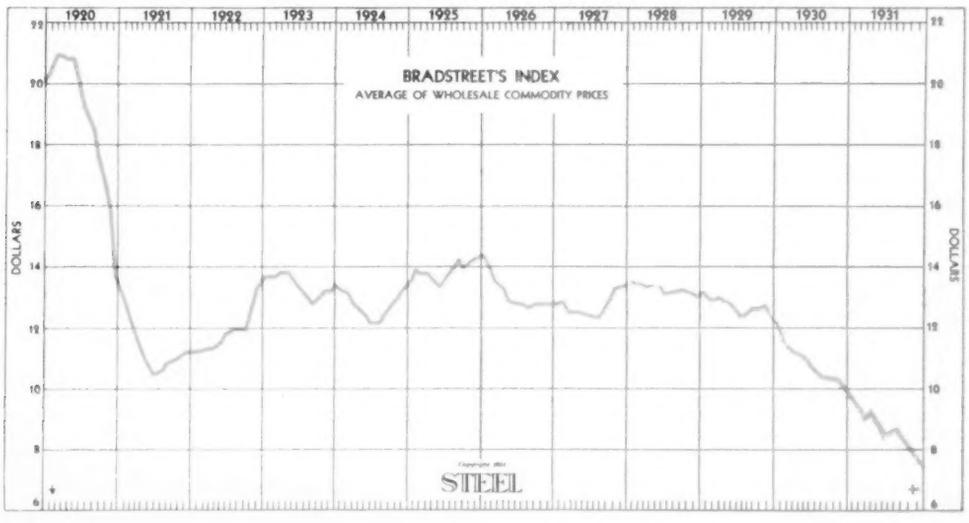
Complete reports of the car service division of the American Railway association show that revenue freight car loadings in 1931 totaled 37,272,371 cars as compared with 45,877,974 in 1930 and 52,827,925 in 1929. This represents a decrease of 18.8 per cent from 1930 and 29.4 per cent from 1929.

Prices of commodities declined somewhat more rapidly in the final two months of 1931 than in the previous few months. Bradstreet's index declined $1.93 in 1931 as against a drop of $2.39 in 1930. STEEL's composite of steel and iron prices stood at $29.96 on Jan. 9, 1932, as compared with an average of $31.71 for the month of January, 1931. A slightly firmer tone is discernible in the prices of many commodities, but this has not yet affected actual quotations, except in a few instances.

Possibility of Increased Auto Sales and Improved Credit Situation Is Seen

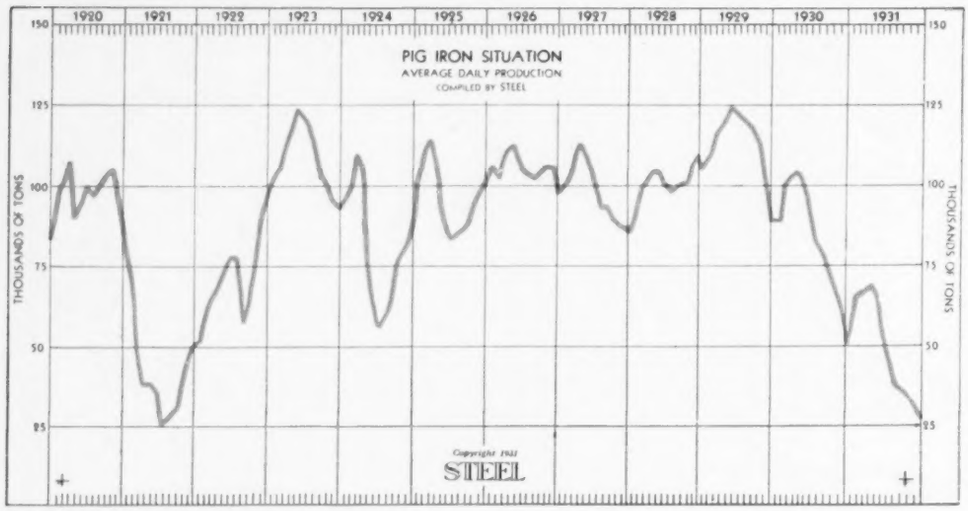
Business sentiment has not changed much since the year-end period, although evidences of improvement in several directions have brought a measure of encouragement. The reaction of the public to the automobile shows is being watched closely as a clue to first-quarter business. Motor car builders are taking a greater volume of steel. Other factors freighted with favorable possibilities are the railroad wage negotiations and the congressional action on the President's appeal for credit relief.

Another favorable development is the strenuous effort being made to reduce extravagance in the administration of local government as a result of the awakening of taxpayers to its tremendous cost. Thus one of the last strongholds of inflated values is being attacked.



1930	
Jan. 1	$9.84
Dec. 1	10.06
Nov. 1	10.30
Oct. 1	10.43
Sept. 1	10.45

1931	
Jan. 1	$7.73
Dec. 1	8.09
Nov. 1	8.30
Oct. 1	8.49
Sept. 1	8.79



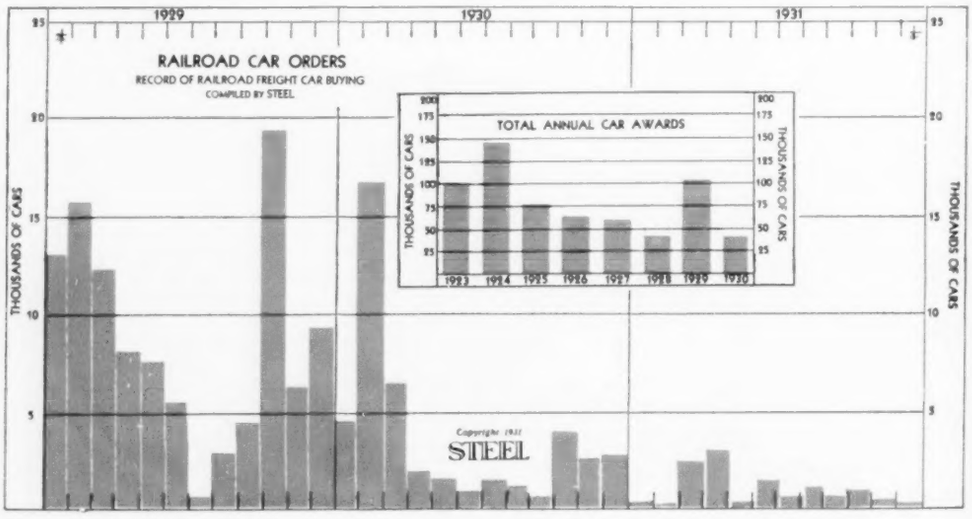
	Tons	
	1931	1930
Dec.	31,694	53,732
Nov.	36,727	62,128
Oct.	37,831	69,851
Sept.	38,947	75,893
Aug.	41,264	81,455
July	47,170	85,110

Decline in Pig Iron Production Is Smallest Since September, 1921

For the eighth successive month, the average daily production of pig iron dropped to 31,694 gross tons. The December tonnage not only established a new low for the year, but the lowest daily rate since September, 1921, when the daily rate fell to 32,859 tons. The all-time record low point occurred in July, 1921, when average daily output declined to 27,892 tons. Total production in December amounted to 982,521 gross tons, compared with 1,101,820 tons in November and 1,665,715 tons in December, 1930. Total production for the year was 18,265,155 tons, compared with 31,441,488 tons in 1930, and 42,270,183 tons in 1929.

Total 1931 Freight Car Awards Drop to New Bottom

With December awards dropping to the negligible total of 11 cars, and orders totaling 10,694 for the year, domestic freight car buying in 1931 was the poorest in the history of the car building industry. The trend clearly shows the past year was one of record lows, March and April being the only two months when car orders were over the two thousand mark. Because of light traffic and impaired earnings, railroads have resorted to rebuilding or repairing and have limited their purchases to the barest essentials. Car builders believe, however, that the moment there is an upswing in general business it will be reflected in railroad buying.



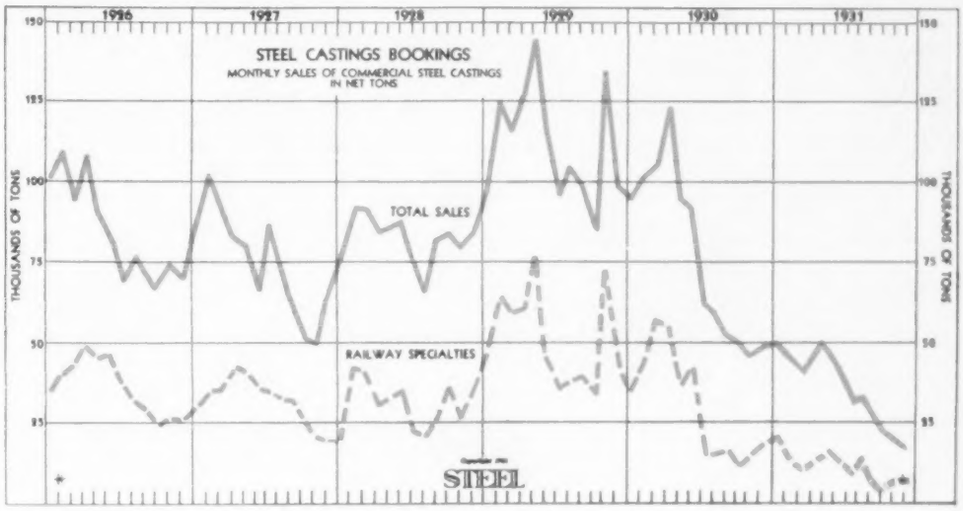
	1931	1930
Dec.	11	2,729
Nov.	35	2,621
Oct.	780	4,116
Sept.	503	576
Aug.	1,104	1,111
July	367	1,389
June	1,910	998

Total New Bookings

	Tons
Nov., 1931	20,000
Oct., 1931	22,851
Nov., 1930	48,123

Railway Specialties

	Tons
Nov., 1931	7,169
Oct., 1931	6,961
Nov., 1930	16,495

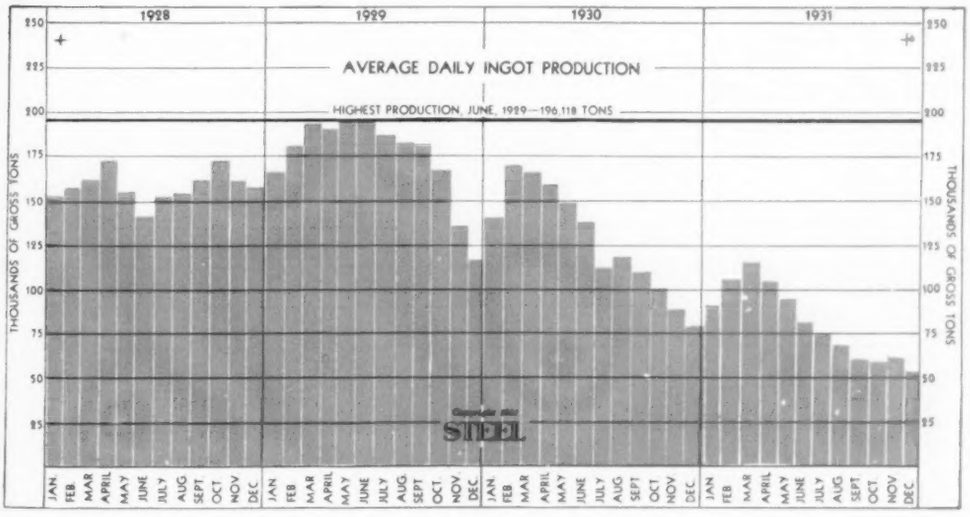


Orders and Output of Steel Castings Continue to Drop

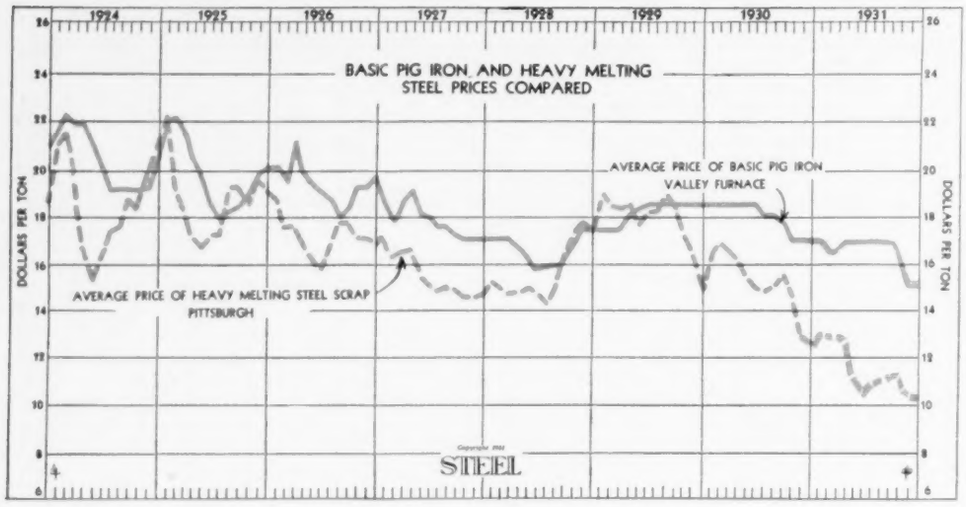
Bookings and production of commercial steel castings descended in November to a new low for 1931. Total bookings reported were for 20,000 tons, compared with 22,851 tons in October. Production declined from 24,083 tons to 23,109 tons, which represents 15.9 per cent of capacity. Railway specialties recovered slightly in November, totaling 7169 tons, making a gain of 198 tons over the October mark. Total new orders for the 11 months of 1931 aggregate 372,792 tons or 23.3 per cent of capacity, compared with 51.1 per cent for the same period of 1930. Total production for the 11-month period was 415,128 tons or 25.9 per cent.

Daily Rate of Ingot Production Sets New Low for 1931

With December establshing a new low for the year, average daily output of steel ingots slumped to 50,092 gross tons, the lowest figure since August, 1921, when average daily output was 48,156 tons. The first quarter of the year marked a continual rise from 91,063 tons in January to establish the peak for 1931 with 115,138 tons in March. With the exception of November, when there was a slight recovery, the balance of the year witnessed a steady downward trend. According to the American Iron and Steel institute, December's production of 1,302,-399 gross tons of open-hearth and bessemer ingots gave 1931 a total of 24,900,195 gross tons.



	1931	1930
		Tons
Dec.	50,092	76,136
Nov.	63,747	88,489
Oct.	58,977	99,724
Sept.	59,523	109,245
Aug.	66,133	117,722
July	72,544	112,393



Basic Pig Iron

	1931	1930
Dec.	$15.00	$17.00
Nov.	15.00	17.00
Oct.	16.50	17.00
Sept.	17.00	17.75

Heavy Melting Steel

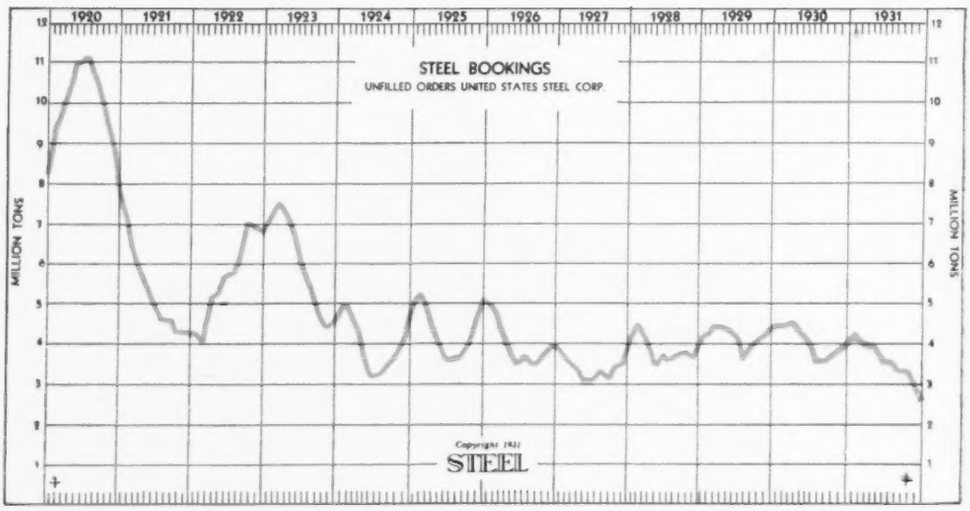
	1931	1930
Dec.	$10.25	$12.75
Nov.	10.25	13.10
Oct.	10.45	14.80
Sept.	10.80	15.70

Spread in Prices of Pig Iron and Scrap is Unchanged in December

The spread between prices of heavy melting steel scrap and basic pig iron remained unchanged at $4.75 throughout December. With the exception of February and March, when prices were quoted at $16.75, the average price of basic pig iron, valley furnace, for the first three quarters of 1931 remained steady at $17. During the last quarter, however, pig iron prices dropped from $16.60 in October to the present low of $15. During the first half of 1931 there was a steady decline in scrap prices from $13 in January to $10.30 in June, a brief recovery was noticed in the third quarter when heavy melting steel reached $10.80 in September, only to drop back to its present low of $10.25.

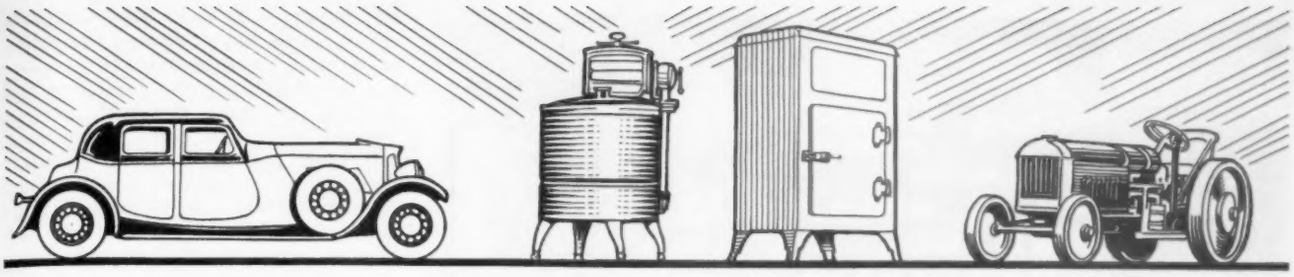
Unfilled Orders Drop for Ninth Consecutive Month

The backlog of unfilled orders of the United States Steel Corp. declined 198,538 tons in December and at the end of the month totaled 2,735,353 tons. This drop in 1931 compares with an increase in December, 1930, of 203,960 tons, which carried the total as of Dec. 31, 1930, to 3,943,596 tons, and an expansion of 291,848 tons in the closing month of 1929. The Corporation's report for December marks the ninth consecutive monthly decline and is the tenth for the year, the only gains occurring in January with 188,755 tons and March with 30,136 tons. The peak for unfilled orders in the Corporation's books occurred on March 31, 1917, with a total of 11,711,644 tons.



Million Tons

	1931	1930
Dec.	2,735	3,943
Nov.	2,933	3,639
Oct.	3,119	3,481
Sept.	3,114	3,424
Aug.	3,169	3,580



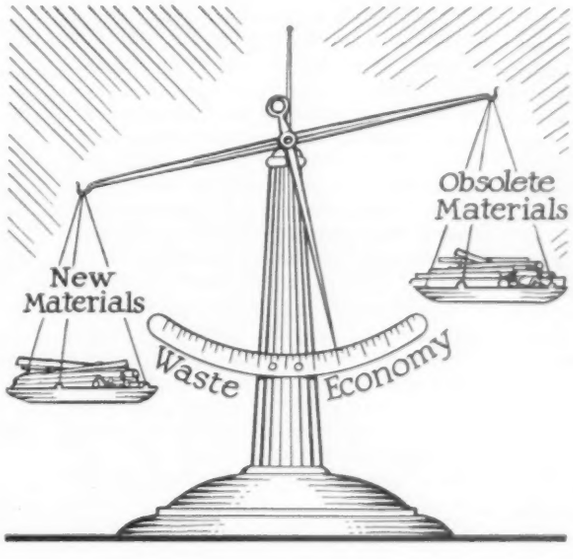
Manufacturers of the above and similar products may realize worthwhile savings by careful selection of the right steel for the right application

Replacement of Obsolete Materials Is Dictated by Economy

BY H. E. MACK, Vice President
La Salle Steel Co., Chicago

IN VIEW of the great amount of attention that has been focused upon obsolete machinery and antiquated methods, it is strange that management has paid so little heed to obsolete materials. It is safe to say that in most modern machines on the market today one can find numerous examples of obsolescence in materials—steels or nonferrous metals misapplied. The waste thus caused by the failure to use the right material in the right place mounts into millions of dollars annually.

Fortunately the incentive to discard obsolete materials now is stronger than at any time in many years. Manufacturers who have given inadequate attention to specifications in time of prosperity are forced by the pressure of strict economy to look more carefully into the details of the materials they use. The reward for such investigation will be both surprising and gratifying. It will be found that unlike the elimination of obsolete equipment, the discarding of out-of-date materials requires no capital expenditure, no rearrangement of plant facilities and no reorganization by management. All that is needed is an open-minded attitude and a courage to break away from tradition if the facts demand it.



Standard steel specifications have been established by the various technical societies, such as the Society of Automotive Engineers (S. A. E.), American Society for Testing Materials (A. S. T. M.), etc. From this standardization and simplification an enormous amount of benefit has been derived and these specifications are rightly the starting basis for the determination of the correct steel for a given part. It is, however, necessary to go beyond this today if one desires the maximum in efficiency and economy.

For a steel to be officially adopted by the various technical societies it must generally have passed through three distinct stages: (1) development; (2) proof; and (3) general acceptance and adoption. This process is often a matter of four or five years and few manufacturers can afford under present conditions to lag so far behind more progressive competitors. Furthermore, there are steels admirably adapted for individual parts, which are not adopted officially due to restricted demand. Therefore, while no one will question the many advantages of standard specifications, it must be evident that they can serve only as a guide and not as a final criterion for the selection of steel. In the final analysis the

Reductions in inventory float and cost of stores are possible by elimination of steel stocked under obsolete specifications

best steel for a given purpose is the one that will provide finished parts at the lowest cost with no sacrifice in utility or service. Data on these developments is the responsibility of the steel supplier, in order that the obsolescence may be eliminated.

Opportunities for saving are especially striking for purchasers of cold-finished steel bars for machinery parts. In the case of manufacturers of automobiles, tractors, agricultural implements, engines, motors, pumps, mechanical refrigerators, washing machines and similar products the savings may range from a few thousand to half a million dollars a year, depending upon the degree of obsolescence of present materials and the tonnage of steel required annually. Certainly possible economies of this order are well worth careful consideration!

New Steels Developed

The table appearing on page 25 has been compiled from data to show the chemical analyses, properties, and prices of ten typical steels covered by S. A. E. specifications and widely used in the form of cold-finished bars where strength, response to heat treatment or case hardening properties and machinability are of prime importance. In countless applications new developments have rendered obsolete these recognized standards by providing increased machinability, improved case hardening properties, greater strength, or sufficient strength at less cost.

In extensive studies conducted during the past two years it has been found that many manufacturers have not been using the most desirable steels available. In one case an automobile company had been using S. A. E. 3115 steel for piston pins. An investigation proved that all requirements as to uniform surface hardness, strength and core toughness could be met successfully with a high manganese case carburizing steel. The specification was changed and the cost per piece including overhead was reduced over 2 cents each.

Save on Machining

In this case the saving was as much in the cost of the steel as in the cost of machining. Production per man-hour for drilling and forming the taper hole on both ends was increased 46 per cent, milling of the slot in the pin was speeded up 48 per cent, chamfering and cut-off operations were performed at a rate of 162 per cent as compared with previous practice. These marked reductions in labor cost, coupled with the reduction in material cost, made it possible to effect a saving per ton greater than the actual cost of the new steel.

In another case an oiler for a drive chain, formerly made of S. A. E. 1112 steel, was changed over to a freer cutting bessemer steel. The cost per piece was reduced in excess of 33 per cent, the saving per ton again exceeding the cost of the raw material.

A manufacturer of transmissions employing S. A. E. 1020 for guide rails was experiencing many rejections due to nonuniform case hardening results and surface imperfections. A modification in steel analysis eliminated both these difficulties at no increase in cost of raw material.

Due to the improved machinability, imparted by cold finishing, bars so processed have replaced hot-rolled material on automotive shafts, eliminating difficulties and rejections and actually reducing the cost of the finished part. In some instances it has been possible fully to maintain strength and toughness requirements of nonvital automotive studs, at the same time effecting raw material savings in excess of $20 per ton.

Countless illustrations might be quoted, but to sum up briefly, results show that 20 to 40 per cent and as high as 60 per cent increased production has been obtained on screw machine parts when produced from the newer specifications in both bessemer and open-hearth steels; $10, $20 and $30 per ton savings often have resulted from the replacement of the older recognized high priced steels, while rejections in many cases have been eliminated almost entirely.

Specify Fewer Grades

Occasionally manufacturers waste money in specifying a number of steels differing only slightly in properties when fewer types of steel would serve just as well. A maker of fine clutches found that he could replace former specifications involving seven grades with two new grades. The net result was a reduction in cost of material, savings in machining costs, improvement in the physical values of the finished parts, reduction in inventory float, reduction in cost of stores and orders, better delivery dates and lowered freight and handling charges.

For a number of years the engineering trend has called for the use of increasingly lighter and stronger parts. This movement has been accentuated by the needs of the automotive industry and the result is a constantly growing use of heat treated parts made from both carbon and alloy steels. In the majority of cases the steel has been fabricated in its natural condition and the heat treatment applied to the machined part, necessitating a final cleaning and straightening operation. The possibility of so correcting "parts" failures or increasing the strength and capacity of machines without change of design is well worth serious consideration. With improved machining tools, combined with freer cutting steels, it is now possible in many applications to employ steels heat treated in the bar to the desired physical properties. Thus, not only worth while economies are achieved but the use of heat treated parts is simplified for the average manufacturer.

Aside from considerations such as the foregoing there is the important problem of keeping abreast of improvements that are being made in the metallurgy of steel. Several steels developed in recent years and

proved satisfactory by ample performance are not yet recognized by standard specifications. Users of steel who are reluctant to try these steels simply because they are not listed in handbooks are making a grave mistake. In some cases they are arbitrarily closing the door to real opportunities for saving.

In many industries it is possible to find on high priced models of machines, parts made of steel priced considerably less than the steel in corresponding parts of low priced models. When this situation exists, it usually means that the manufacturer of the lower priced machine is paying unnecessary tribute to tradition.

Suppliers of steel not always have been anxious to look at customers' blue prints for the purpose of helping them in the choice of steels. At times in the past the steel industry was so notoriously uninterested in consumers' requirements that certain large users of steel virtually were forced to write their own specifications and to plead with the steel producers to supply them with the type of steel required.

Today the situation is somewhat different. Many steel companies, and especially those handling steel for machinery parts, are equipped better than ever before to diagnose the customer's problem and prescribe for his requirements.

Gas Products Association To Meet in Chicago

The Gas Products association will hold its annual convention at the Lake Shore Athletic club, Chicago, Jan. 22-23, with "Forging Ahead During the Depression" as the keynote. The program will include a wealth of information which can be applied directly to present selling problems of the industry, and presentation of several new association activities.

Headquarters of the association are at 250 East Ontario street, Chicago.

Process Heating Subject Of Second Conference

The second educational-industrial conference, sponsored by Case School of Applied Science, Cleveland, and the Cleveland Engineering society will be held on the campus of the former institution, Feb. 10-12, and will be devoted to the subject of industrial process heating. Conference periods during the three-day meeting will be from 4 to 6 p.m., and from 7:30 to 10 p.m.

The opening session will include discussion of the economic availability of various heat sources for processing operations. Other discussions will be centered about heat transfer media, refractories, insulating materials, trends in industrial fuel fired furnaces, developments and possibilities of gaseous fuel for process heating, application of electricity to process heating, and economics of electric furnaces versus fuel furnaces. Exhibits and demonstrations of materials, equipment and processes have been arranged by a number of manufacturers, preceding each day's first conference period.

Requests for detailed program and registration information should be addressed to W. R. Veazey, Case School of Applied Science, Cleveland.

Ten Typical S. A. E. Steels

Specification	Properties	Price, per 100 pounds
Shafting	Transmission and machinery shafts	Carbon base
S.A.E. 1112	Free machining for screw machine parts	$.10 extra
S.A.E. 1120	Compromise between machinability and case hardening properties—screw stock	$.10 extra
S.A.E. 1020	Standard case hardening steel	$.15 extra
S.A.E. 1035	Medium strength steel	$.25 extra
S.A.E. 1045	High natural strength materially increased by heat treating	$.25 extra
S.A.E. 3120	Poor machining, good carburizing alloy steel	Alloy base, $.55 extra
S.A.E. 3135	Poor machining, good heat treating alloy steel	Alloy base, $.55 extra
S.A.E. 2220	Good carburizing, tough core alloy steel	Alloy base, $1.50 extra
S.A.E. 2340	Strong, tough steel when heat treated	Alloy base, $1.50 extra

Develops New Steel for Piercing Points And Plugs in Seamless Tube Making

A NEW alloy steel, developed by the Crucible Steel Casting Co., Cleveland, after two years experimentation, holds considerable promise for the seamless tube industry. The new product, to be used in the manufacture of piercing points and rolling mill plugs, is known as Crusco steel. Seamless tubing is made in diameters up to 24 inches; the piercing points being used for piercing the billets and rolling mill plugs for sizing the tubing after piercing.

In the short time the steel has been used, important changes have been brought about in the seamless tube industry, according to Homer Tielke, secretary of the company which is well known as a manufacturer of piercing points. Tooling cost is said to have been reduced 75 per cent and the percentage of scrap tubing has decreased. These two factors have enabled the industry to compete for the first time on a more equal basis with welded pipe and to enter the field of corrosion-resisting steel, the most difficult yet encountered.

Commenting further, Mr. Tielke states that tooling has been one of the big items in the seamless tube industry and a material lowering of this cost through use of the new alloy will place the industry in a more advantageous position.

Because of its homogeneous structure and ability to withstand high shock at 2000 degrees Fahr. required in making piercing points and rolling mill plugs, the alloy is said to be capable of outlasting many times the material now used for this service. In the early days of tubing manufacture, service on tools was light, but development of longer and thinner walled tubing made it difficult to obtain tools which would stand the longer process.

Final details in regard to refining of the steel and its heat treatment were perfected by Dr. Frederick K. Bezzenberger, technical director, Cosma Laboratories, Cleveland. Working for two years, Dr. Bezzenberger constantly changed the heat treatment so that the material would have a homogeneous structure and made comparative microscopic examinations of structure changes.

Constituents of the alloy are chromium, vanadium, tungsten, cobalt and nickel. Use of cobalt in alloy steels is relatively new, and as compared with other constituents, is probably the highest priced. Heat treatment of the new steel is exceedingly difficult, and hundreds of experiments were carried out to create a material with homogeneity of structure suitable for severe work.

Patents covering the analysis of the alloy, its heat treatment and applications recently have been granted to Mr. Tielke.

Free-Machining 18-8 Steel Contains High Sulphur

AN ANTIFRICTION chrome-nickel corrosion-resisting steel of the popular analysis containing 18 per cent chromium and 8 per cent nickel is the latest addition which the Carpenter Steel Co., Reading, Pa., has made to its family of free-machining stainless steels. The free machining properties are attained by introduction of sulphur to the extent of 30 per cent.

The new material, designated Carpenter stainless steel No. 8, is made under a patent issued last month to Frank R. Palmer and assigned to the Carpenter Steel Co. of which he is assistant to the president. The patent covers the general use of abnormally high sulphur to provide free-machining properties in stainless steels. The broadest claim of the patent reads:

"1—As a composition of matter, a corrosion-resisting alloy steel containing essentially between 7 and 30 per cent of chromium, and between 0.15 and 1.80 per cent of sulphur, and characterized by antifriction quality."

General problems involved in the machining of corrosion resisting steel long have been recognized, and early in 1928, the Carpenter company placed on the market a high-sulphur corrosion-resisting steel, made under the then pending patent, and showing remarkable machining properties. This steel was known as Carpenter stainless steel No. 5 and contained approximately 0.10 per cent carbon, 14 per cent chromium, and 0.30 per cent sulphur. Complete data on properties and performance were published in STEEL, July 24, 1930, page 50.

Advantages of Sulphur

During the past four years since the No. 5 grade was introduced, it has become generally recognized that high-sulphur chromium iron can be machined in automatic screw machines with standard shop tooling at speeds equal to or closely approximating those used for common bessemer screw stock. The problem of drilling, tapping, die threading and even drilling with gun-barrel drills, was solved by the use of high-sulphur steel.

The sulphur addition not only overcame the machining difficulties but cleared up the cause of the trouble, namely, the high friction qualities. It was found that wire and tubing could be cold drawn with no metallic coating, simply using the lime coat and lubricants normally employed for common steel.

From a service standpoint, the nongalling, nonseizing properties of high-sulphur stainless iron has led to its wide adoption for mountings in gate valves to prevent scratching when opened and closed; in pump rods to prevent galling and scratching in the packings; and a great variety of other similar applications. This steel has been widely adopted for golf club heads because the cost of hand grinding and polishing was reduced approximately 50 per cent through the free grinding properties of the metal.

The 18-8 chrome-nickel steels not only possess high frictional properties by reason of the chromium but, independent of this, they are difficult to machine because of their austenitic structure and great toughness. The new high-sulphur 18-8, however, is claimed to bring the austenitic chrome-nickel steels into the class of free-machining products.

An exhaustive test recently conducted in the plant of a bolt and nut manufacturer gives some interesting comparisons. In this test, all operations were conducted simultaneously on Carpenter stainless steel No. 4, the orthodox 18-8 analysis containing low sulphur, and Carpenter stainless steel No. 8, the same base composition with high sulphur.

Operations Speeded Up

On a four-spindle automatic, drilling and cutting off standard nuts from ⅝-inch cold-drawn hexagon bar, the highest speed attained on the nonfree-cutting steel was 120 surface feet per minute, which dropped a finished piece from the machine every 20 seconds. This speed was excessive, however, since the tooling began to break down after 12 nuts had been made. Bars of the No. 8 steel were run at a surface speed of 150 feet per minute with increased feed, dropping a nut every 10 seconds with no indication of damage to the tools. Taking high-sulphur bessemer screw stock as 100 per cent, the No. 8 steel was run at a production of 75 per cent, and, compared to S. A. E. 3135, this production was 125 per cent.

On a power hacksaw, cuts on the nonfree-machining 18-8 required 1 minute 20 seconds as against 30 seconds for the free-machining type.

A further comparison of machinability was made on a nut tapping machine, using a bent-shank tapper tap. It was found impossible to tap the nonfree-cutting 18-8 on this machine, as the second nut jammed the tool. The free-cutting steel tapped freely at the rate of 2.5 seconds per nut. The tap was made of carbon tool steel for cutting a 7/16-inch x 20 thread.

A comparison between the two grades was also made with a standard high-speed twist drill, drilling a ¼-inch hole. Under equal conditions, it was possible to drill the free-machining grade of steel 1 1/16-inches deep in 28 seconds. The nonfree-machining steel ruined the drill at a depth of ⅜-inch after 20 seconds of cutting.

The corrosion resistance of these high-sulphur grades is found to be just about the same as for the low-sulphur types and it is now common practice to use the free-machining grades and corresponding nonfree-machining grades interchangeably, the buyer simply selecting his type with consideration to the methods he will use to fabricate finished parts. It is general practice to use the nonfree-machining types for parts which are brought to shape by bending, forming or drawing, and to use the free-machining type for parts which are brought to shape by machining.

Symposium on Steel Castings Is Planned

A symposium on steel castings is to be held at this year's annual meeting of the American Society for Testing Materials in Atlantic City, N. J. This symposium, sponsored jointly by the testing materials organization and the American Foundrymen's association, will be the second on the subject of castings sponsored by these two societies, the first being included in the 1931 A. S. T. M. meeting and covering the subject of malleable iron castings.

The steel castings symposium will be a means of correlating and recording data on the properties of steel castings, molding, casting, use of alloys and heat treatment. Further information may be obtained from the office of the American Society for Testing Materials, 1315 Spruce street, Philadelphia.

Steel Founders Announce Annual Meeting

Annual meeting of the Steel Founder's Society of America Inc. and the heat-corrosion resistant alloy founders' division of the society will take place at Stevens hotel, Chicago, Jan. 20 and 21. In addition to election of officers, managing director's report and other incidental business, discussions will be presented by Walter Buchen, president, The Buchen Co., Chicago, on "Merchandising and Prices"; by J. G. Ritter, foundry and welding engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., on "The Use of Steel Castings in Welded Structures"; and by Arthur Simonson, vice president, Falk Corp., Milwaukee, on "Firm Bidding." The annual address will be given by W. H. Worrilow, president of the society.

New Refractories Tested in Drive for Lower Costs

BY HOBART M. KRANER

Westinghouse Electric & Mfg. Co.

CONDITIONS in industry in a large measure determine the trends of its developments. At the present time the metallurgical industry is not pressed for quantity production. A better product at a lower cost is the necessity. Retention of financial reserves is also highly desirable with the present rates of production. In many cases, therefore, low initial installation costs are important factors where the producer is not sure of his market. These are probably some of the reasons accounting for distinct evidence of a wider use of cheaper refractories where hitherto they have not been used extensively.

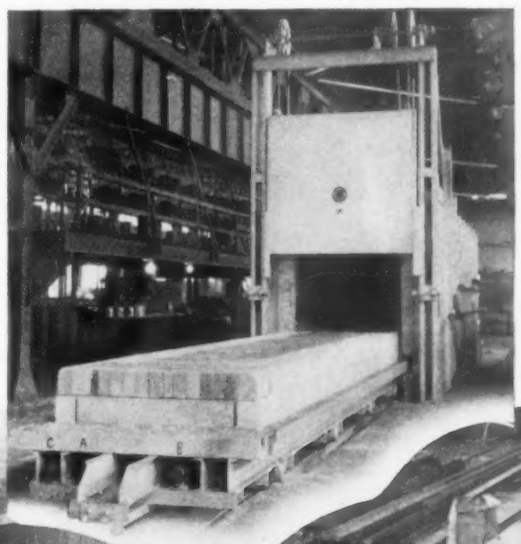
Results of experiments have shown what possibilities were to be expected in the substitution of aluminous and other clay refractories for higher priced materials, but present conditions have furnished the needed impetus to their use. Accordingly, we find fireclay, mullite, cyanite, and aluminum silicate refractories richer in Al_2O_3 than mullite ($3Al_2O_3 \cdot 2SiO_2$) being used in contact with ferrous alloy melts. In one installation of a rotary alloy steel furnace such a refractory has doubled the lining life.

The ceramic developments leading up to a better understanding of aluminum silicate refractories have their bases in the fundamental study of the melting relations of the alumina-silica system. Refractories of this type having the lowest degree of high-temperature plasticity therefore contain alumina in excess of the mullite composition. Silica bricks are noted for their rigidity at elevated temperatures, but knowledge of the alumina-silica system has so decreased the plasticity of the aluminous silicate refractory at elevated temperatures that mullite compositions have been substituted for silica in electric furnace roofs.

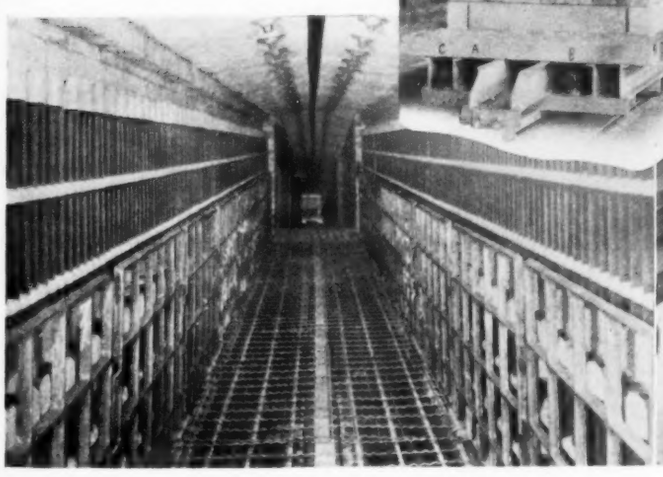
Ramming and patching are becoming more and more popular and economical. This has been effected through the development of refractory, non-shrinking mixtures which are, nevertheless, sufficiently plastic. Another reason for this popularity lies in the appreciation of the fact that the installation technique is extremely important to the success of a rammed or patched lining. Many of these cements are more expensive than those developed previously but

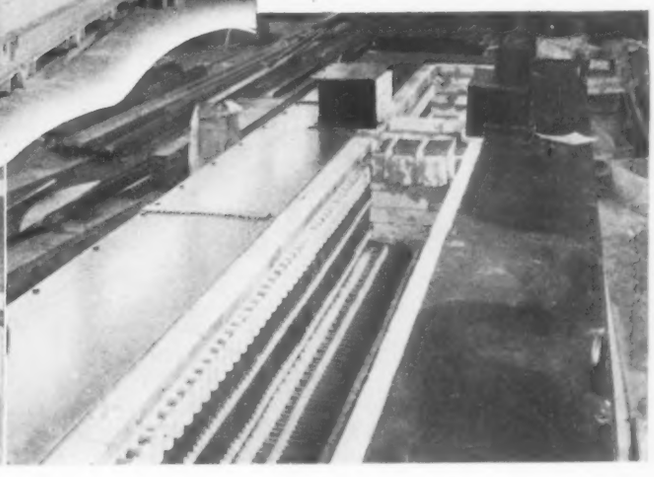
IN CONNECTION with the annual review of refractories developments in 1931, published on page 168 of the Jan. 4 issue of STEEL, many interesting comments were received which, due to space limitations, could not be given deserving attention. Among them were the accompanying remarks by Mr. Kraner who is superintendent of the Derry Works of Westinghouse Electric & Mfg. Co., Derry, Pa.

CAR-TYPE electric annealing furnace, at right, showing refractory construction of car. Illustration below shows an interior view of an electric counterflow vitreous enamel furnace of large size



A BETTER refractory product at a lower cost has been the demand of furnace builders. The illustration below is an interior view of a lead bath furnace showing refractory construction





it has been demonstrated that many of the better cements materially decrease furnace maintenance costs. The initial cost of such a cement should not be used as the sole criterion of value. In many cases these cements contain corundum, mullite or silicon carbide, and are, therefore, expensive but generally more refractory than the type of cement sold in the recent past.

Better control in refractories plants is making it possible for them to produce fireclay shapes of more accurate dimensions. In an effort to produce fireclay bricks and shapes of higher density and accuracy, higher pressures, mold evacuation and the introduction of special gases in the material are being tried. Higher pressures look immediately promising while evacuation of the mold and the introduction of gases in the material to promote plasticity and adhesion of the particles appear hopeful. Such dry pressed refractories are less permeable and have properties similar to the plastic process bricks. They are also less liable to spalling than the ordinary dry pressed product.

Beryllium Oxide Tested

Researches concerning gases in metals require refractory crucibles which in themselves give off little gas. Beryllium oxide has been attracting some attention as such a refractory but as yet has not been thoroughly investigated and its possibilities are not entirely known.

The lower cost of chrome ore and recent improvements made in the characteristics of chrome brick are extending their use to the entire bottom of basic steel furnaces as a substitute for magnesia. To some extent this development is being offset by the utilization of West Coast magnesite which has an iron content lower than that usually imported. It has been found possible to simulate the characteristics of the imported material through the introduction of iron salts. Such a combination, therefore, has somewhat cheapened the magnesite brick to meet the chrome brick competition.

Other New Materials

Euhedral corundum, another form of Al_2O_3 recently discovered, has been made commercially and proposed for many uses. Bricks made from it have been tried in certain metallurgical operations but its utility has not yet been clearly determined.

Silicon carbide, generally considered only as a super-refractory, is being recognized for its resistance to abrasion and is being used more extensively for this purpose. It has been used advantageously in the throats of open hearths, in billet heating furnaces and pipe normalizing furnaces where there is serious abrasion. Silicon carbide is found also to be a satisfactory refractory in the melting zone of copper and copper alloy cupolas.

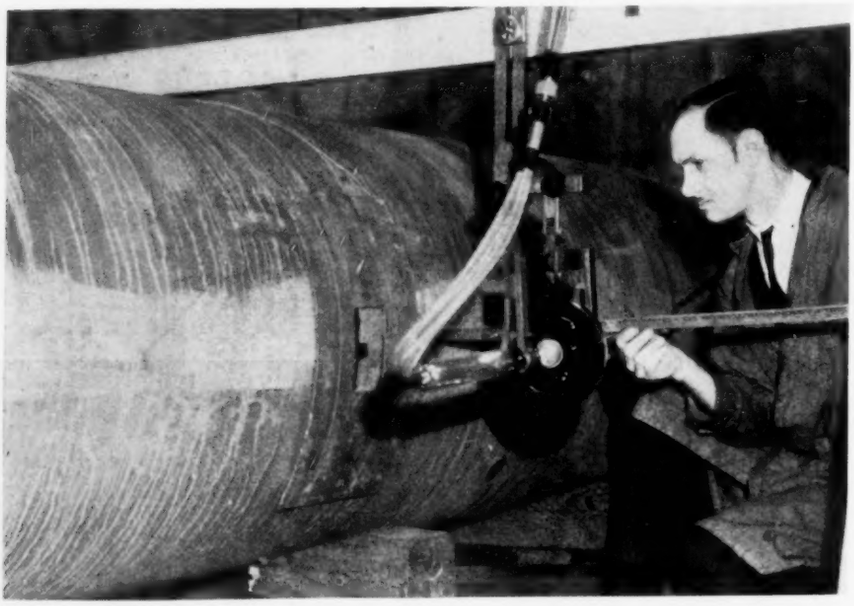
Reports are current of several new refractories developed for nonferrous melting in which the oxides and other compounds of the materials to be melted are added to the refractory in order to develop compatible phases within that refractory It would seem that such developments eventually will show considerable promise.

Manufacturers of aluminum alloys, troubled with the absorption of the iron from the pots in which aluminum has been melted, are finding that graphite crucibles are desirable from this standpoint.

Several new insulating materials have been recently developed which are interesting. A specially prepared alumina has been found to give high insulating value. Several new bloated refractory clay-type insulating materials have also been developed. These are somewhat more refractory than those previously reported, and are welcome as there is a distinct need for insulation which withstands higher temperatures.

Extensive use of tunnel kilns has developed an increased market for special shapes and kiln car refractories. The economy of space in the car settings has necessitated the use of higher strength refractory slabs and other similar special shapes. The demands are being met with refractories such as those of the mullite type and carborundum-clay mixtures.

These developments represent real progress in the field. It is increasingly apparent that the refractories industry is recognizing and meeting needs for refractories suitable for present-day requirements.



THICKER GLASS, HIGHER VOLTAGE ON NEW X-RAY TUBE: By substituting glass of ¼-inch thickness in place of the usual 1/64-inch, by changing the geometrical design and by increasing the water cooling of the target, research engineers of the General Electric Co., Schenectady, N. Y., have found it possible to increase voltage at which the tube can be operated from the former maximum of 200,000 to a present 300,000 volts and higher. X-ray pictures through 4 inches of steel can be made in 15 minutes, compared with the several hours previously required. Illustration shows one of the new tubes being arranged to X-ray the weld in a forging for a mercury-turbine power plant

Inventors To Show Wares

Announcement has been made of plans for the third International Patent exposition, to be held at Convention hall, Philadelphia, Feb. 1-10. Designs of inventors from 25 nations will be represented at the exposition, including models of patents obtained by some 445 women. Maj. Gen. George O. Squier, a well-known inventor himself, is honorary chairman of the affair which is expected to eclipse records of the second show, held last year in Chicago. Patents and models pertaining to all branches of industry will be on display.

Electrochemists To Meet

Plans are shaping up for the sixty-first meeting of the Electrochemical society, to be held in Baltimore at the Lord Baltimore hotel, April 21-23. Included on the program are discussions of electrolytic copper and its by-products, electrodeposition, and the electric furnace and its products, the latter to be lead by J. T. MacKenzie, metallurgist, American Cast Iron Pipe Co., Birmingham, Ala. Further information is available from Colin G. Fink, Columbia university, New York, secretary of the society.

Corrosion-Resisting Metals Depend Upon Oxide Films

THIN oxide films, which are responsible for the apparent stability of such metals as aluminum and stainless steel, usually are too thin to give interference tints; they are invisible while in contact with the metallic base, but are perfectly visible when removed from it.

Although the films produced by air alone give some protection, the stability can be increased by special treatment with oxidizing agents. The slightly thicker films produced on the heating in air give rise to beautiful interference tints, such as the temper colors on iron; but they tend to crack and usually have little protective value.

These interesting facts were revealed by Ulick R. Evans of Cambridge university, Cambridge, England, in presenting the tenth autumn lecture before the meeting of the British Institute of Metals in Zurich, Switzerland, Sept. 13. The title of the lecture was "Thin Films in Relation to Corrosion Problems."

According to Mr. Evans, almost all methods of removing a film, whether an invisible film or one thick enough to produce an interference tint, depend upon some treatment which will dissolve the metal immediately below, thus allowing the film to peel off. For films on aluminum, nitric acid or gaseous hydrogen chloride has been used; for iron, a solution of iodine; for other metals, anodic treatment in a chloride or sulphate solution. Sometimes it is possible to transfer the film to glass or cellophane, and the films responsible for heat tints often show tints even after removal to the transparent support.

Impurities Break Down Film

Although certain additions to metals, especially those which pass into solid solution, increase the resistance, impurities present as a second phase often increase the tendency for a breakdown of the film to extend, thus increasing the total destruction, although sometimes rendering the attack to be less localized and hence less intense.

Most natural oxide films are not wholly impervious to ions; they contain weak points. To be useful they must be self-healing, in other words, the secondary corrosion product must be precipitated to close to the weak points in the film, as to seal the defect automatically. The movement of electrode potential with time provides a valuable method of observing whether in any particular case the weak points are healing up or are extending.

Such methods have been used to demonstrate the self-healing qualities of the film present on new brass containing aluminum, which now is being used with success for condenser tubes; they can also be applied to the comparison of various steels containing nickel, or chromium and nickel, under different conditions of heat treatment and surface treatment.

A corrosion product can be protective only if produced very close to the metal. Lead resists a sulphate solution, but not a nitrate solution; galvanized iron resists small drops of salt water better than large drops. When part of the surface of an immersed metallic specimen is screened from oxygen, any weak points on the screened area will tend to develop, while on the well aerated part they will tend to heal up; foreign bodies lodging in condenser tubes often cause local attack, probably as a result of their screening action.

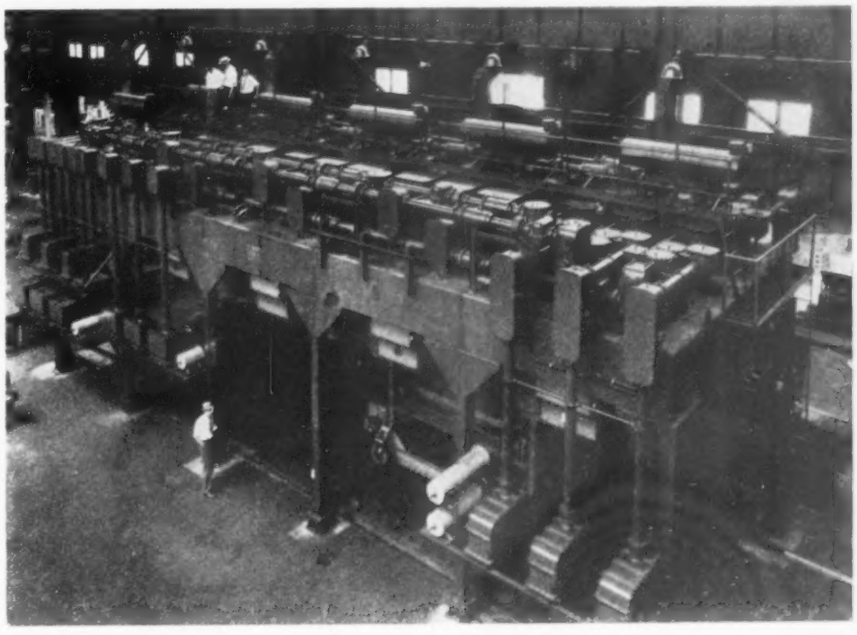
When the concentration of oxygen or oxidizing agent remains fairly uniform, the water line is the weakest place; an aluminum sheet introduced vertically into a chloride solution is mainly attacked along the water line and at the cut edges. Under conditions where metal is continually bent, or abraded, or bombarded by air bubbles, while in contact with a corrosive solution, the mechanical erosion will often prevent self healing, and corrosion will continue; likewise the combination of alternating stresses and corrosive influences causes damage far more rapidly than either alternating stresses or corrosive influences acting alone.

Such cases cannot be explained on purely mechanical or purely chemical principles; both influences must be taken into consideration; consequently a greater collaboration between engineer and chemist is called for than has been obtained hitherto.

Finds Wider Use for Steel in Outdoor Electrical Switching Equipment

MORE extensive use of steel in the construction of outdoor switching equipment built by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., and now being shipped to the Chicago District Electric Generating Corp. for installation at its State Line station, is said to have completely eliminated danger from electrocution.

Five of the ten units are shown in the illustration below, each unit weighing 90,000 pounds and being designed to carry 3000 amperes at 25,000 volts. This high voltage, usually a hazard to operators, is



rendered safe by encasing all current-carrying conductors in tubular shells filled with oil. The insulation is claimed to be so efficient that attendants may climb over the equipment safely even when it is energized.

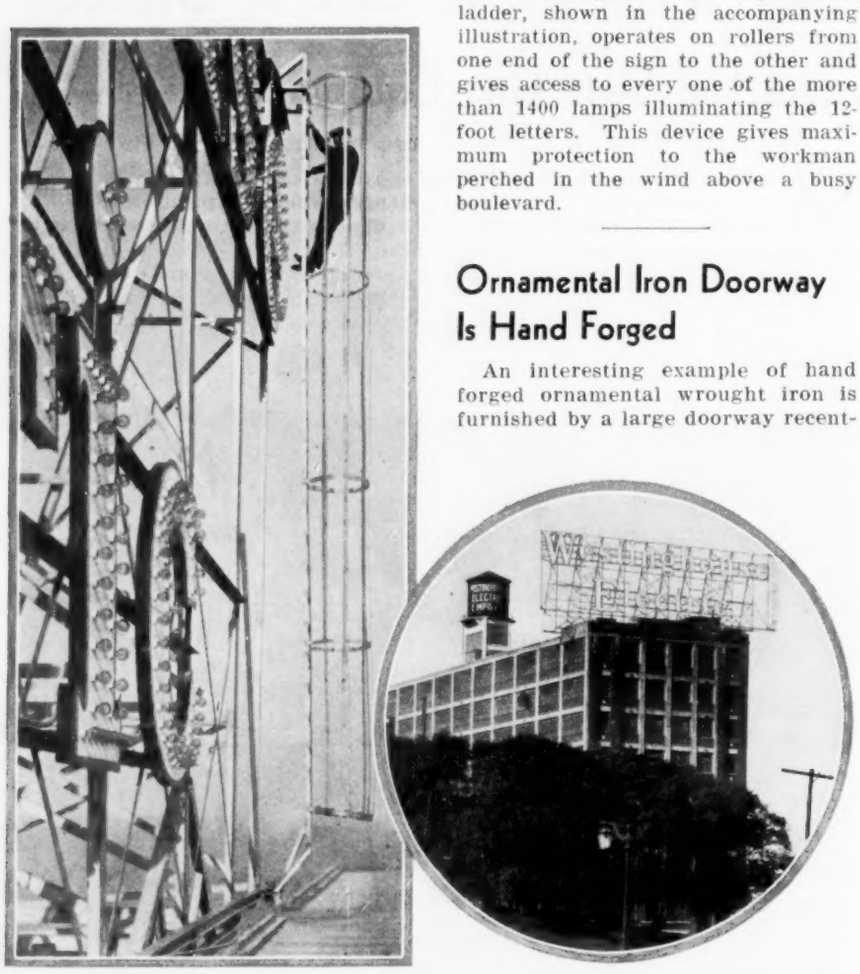
Compared with units of equal capacity, these oil-filled switchgear units occupy less than one-third the space required by outdoor units of conventional design. The new design permits each unit to be assembled completely, filled with oil, and tested before it is shipped. Formerly such apparatus was assembled and tested in the field.

A breather features this equipment. Expansion of the insulating oil is provided for by means of an expansion tank and, as temperature changes cause the oil to expand or contract, air, which occupies the space above the oil, leaves or enters the tank through the breather or dehydrator where all moisture is removed from the incoming air. Otherwise, the insulating value of the oil would be lessened by the breathing action.

Safety-Cage Ladder Protects Workman On Arc Welded Electric Sign

ELECTRIC welding was employed throughout in constructing a 100-foot electric sign on the Cleveland foundry of Westinghouse Electric & Mfg. Co. This sign, said to be the first in the world completely assembled by arc welding, required 14 tons of steel. Welding was employed to make every piece an integral part of the completed structure, capable of withstanding the strain of gales from Lake Erie, which is only a few hundred yards away.

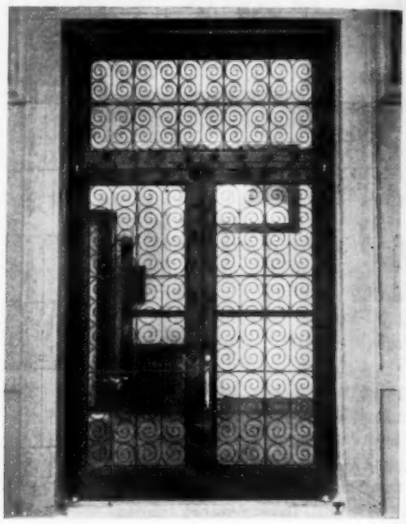
Incorporated in the sign is a novel safety device consisting of a cage ladder to be used when the electrician cleans or replaces the lamps. This ladder, shown in the accompanying illustration, operates on rollers from one end of the sign to the other and gives access to every one of the more than 1400 lamps illuminating the 12-foot letters. This device gives maximum protection to the workman perched in the wind above a busy boulevard.



(Left)—Closeup of the sign showing welded joints and the safety cage ladder. (Circle)—The Cleveland foundry with the sign in place

Ornamental Iron Doorway Is Hand Forged

An interesting example of hand forged ornamental wrought iron is furnished by a large doorway recently installed at the entrance to the new Orville B. Gorin library of James Millikin university, Decatur, Ill. Shown in the accompanying illustrtion, the work was carried out



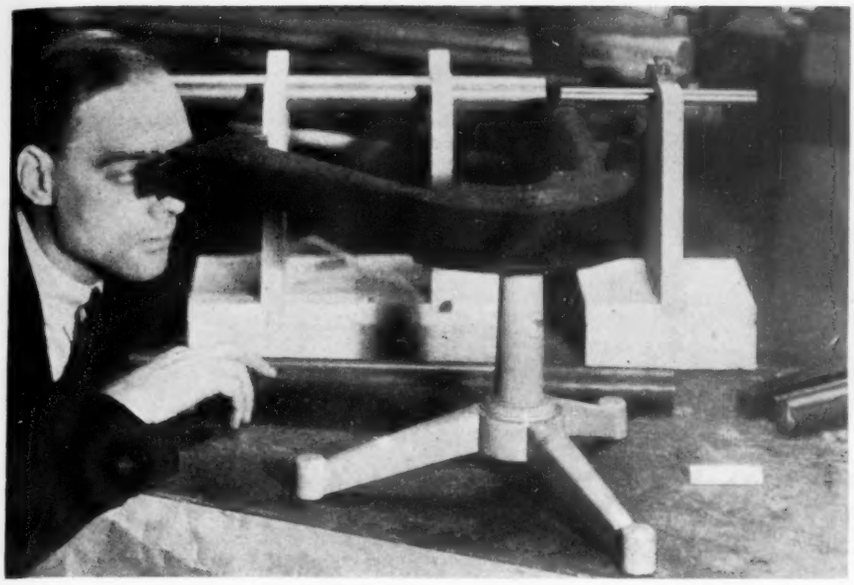
in the plant of Gandy & Earp Inc., Decatur, and required nearly nine weeks for its completion.

The metal was given a dull jet black finish by use of a special type of oil-fired furnace. The wrought iron was heated to a dull cherry red, submerged in mineral oil for few seconds, rubbed with wax and then baked in the furnace. Variation of the heat applied to the metal by a few degrees, and a difference of 4 seconds in the time it is submerged in oil determines whether the product will be anywhere from a dull charcoal black to a bright oil luster, it is said. Use of different types of hammers also varies the finish.

Chromium Finds Wider Use In Modern Architecture

Use of chromium is increasing rapidly in the architectural design of large buildings, according to H. Weitze, president, Carlton Plating Co., New York, who points out that practically all of the important tall buildings erected in New York during the past five years have used chromium effectively in their decorative motifs.

In the new architectural spirit where there is a suppression of detail and a sharp delineation of line, chromium is suited for use in enhancing the aesthetic motif of the building, says Mr. Weitze. It blends in color with the most favored building materials and adds a sparkle of life and progress. From a utilitarian standpoint, chromium is particularly adapted for building construction, for it holds its luster in smoke laden atmosphere.



Setup for spectroscope estimation of alloy content in steel bar. Electric arc is struck between the steel specimen and an iron rod

Spectroscope Permits Rapid Estimation Of Alloying Elements in Steel

ADAM HILGER LTD., 24 Rochester Place, Camden road, London, England, has introduced a special type of spectroscope, known as the Spekker Steeloscope, for quick estimation of alloying elements in steel samples. The instrument is designed for use in the ordinary shop or laboratory and is said to reveal in a roughly quantitative way such elements as nickel, chromium, molybdenum, manganese, titanium, tungsten, cobalt, copper, tin, cadmium and vanadium present in steel.

Spectrum Lines Examined

Specimens of the steel under examination are used as the poles of an electric arc, and the light from this arc is diffused by an optical system and prisms into spectrum lines. Visual inspection of characteristic spectrum lines discloses the presence of various elements and their approximate proportion. Accuracy of the order of 0.5 per cent is said to be possible with a little practice in handling the instrument.

Any shape or size of specimen may be examined, such as bars, billets, filings or turnings. Rust or scale must be ground or filed from a small spot on the specimen where the arc is struck. Direct current of 150-250-volt potential is suitable for the arc; resistance is connected in series to provide a current through the arc of about 8 amperes. Specimens are arranged to form the negative pole of the arc. Filings or turnings can be placed in a metal cup which, in turn, is placed on a sheet of metal to which one pole of the current supply is connected, an iron rod connected to the other pole being brought down on the surface of the cupful of filings or turnings in striking the arc.

Eyepiece Is Adjustable

The steeloscope, shown in the accompanying illustration, is made up of two tubes joined by a metal body; the tube directed toward the arc being known as the collimator, the other tube containing the eyepiece being termed the telescope. The body of the instrument into which the tubes lead contains prisms which produce the spectrum. The eyepiece with focusing adjustment is fitted on a slide which is movable horizontally, bringing various portions of the spectrum into prominence. In use the collimator is pointed directly at the arc with its end from 3 to 6 inches from the latter. Positions for observing spectrum lines of various alloying elements are marked on the eyepiece and it should be set in accordance with these markings. Reference diagrams, instructing the observer how to look for the lines of the various metals, are supplied with the instrument.

Riehle Bros. Testing Machine Co., Philadelphia, has been appointed exclusive agent for Adam Hilger Ltd., in this country, British Columbia, Alaska, Hawaii, Philippine islands and Mexico.

Periclase Refractory Is Still in Development

In the annual review of refractories progress in 1931, published on pages 168 and 169 of the Jan. 4 issue of STEEL, a comment made by R. E. Griffith, manager refractories sales, E. J. Lavino & Co., Philadelphia, on the new periclase brick was stated incorrectly. The statement was "This brick shows many advantageous physical properties and is claimed to give economical service in roofs of open-hearth furnaces."

Development work on this brick still is under way and the statement should have read "Tests on this brick are now being conducted in furnace roofs and, judging from results so far obtained, this type of brick may be developed to a point where it will give economic service in the roofs in open-hearth furnaces."

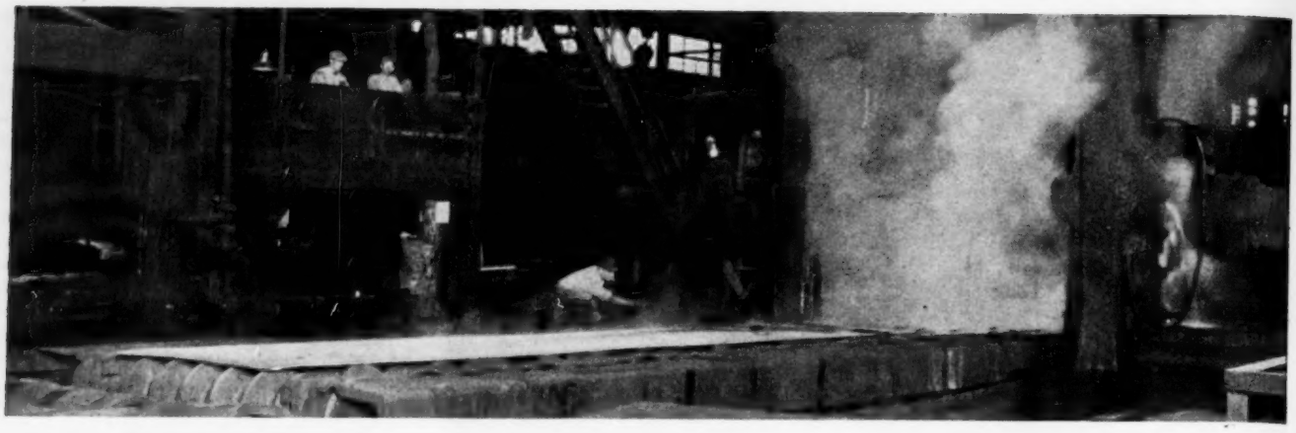
Chrome-Plated Piston Pins Show Long Wear

Chromium-plated piston pins, combining corrosion resistance with long wearing qualities, recently have been developed and offered for both equipment and replacement use by Thompson Products Inc., Cleveland. It is claimed that this type of pin will outwear a hardened steel pin and will not require replacement during the life of the automobile.

For several years engineers have realized the possible advantages of chrome plated pins, but difficulties encountered in plating, including uniformity of coating and preventing the ends from building up, have retarded progress. The chrome-plated pin has a lower coefficient of friction than the hardened steel pin, and the danger of seizure between pin and piston boss is minimized.

The pins are plated by a continuous process, insuring an even application of the plate. After finish grinding and lapping to a size commensurate with the amount of plate to be applied, the pins are charged on rods which revolve between anodes in a circular tank. At the same time the pins are rotated about the rods. Current density and bath temperature are controlled closely by automatic devices, and the plate thickness can be held to close limits by adjusting the anode positions.

After the pin is removed from the plating bath and washed, a bright plate of uniform thickness shows. No other machining operations are necessary. Inspection with amplifying gages follows after which the pins are sorted in matched sets. The plated pins are easily distinguishable by their bluish-gray color.



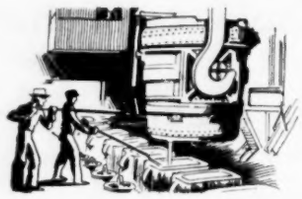
PROGRESS IN STEELMAKING

CONVERTING alternating into direct current now is accomplished by a newly developed thyratron tube. One of these tubes has been installed in a wire-drawing plant. By means of the tube, the output of which is controlled by the tension of the wire, a direct-current motor is operated on an alternating-current system. The advantage obtained is the range of speed possible with a direct-current motor. As the wire is wound on the reel and the diameter of the reel built up, the speed of the motor gradually is decreased. Thus uniform tension is kept on the wire, resulting in a more uniform product.

♦ ♦ ♦

Instead of equipping heavy bar mill shears with continuous running motors and flywheels and actuating the knives by the application of a clutch, direct-current motors now are coming into favor, the motors starting and stopping for each cut. On an 800-ton slab shear recently installed in a mill for cutting 8 x 8-inch blooms, two 200-horsepower direct-current motors are used, a maximum of 14 cuts being made per minute with a start and stop between actuations.

A TEMPERATURE control system recently installed on a 1000-ton stack in the East has effected better smelting practice due to a uniform hot band above the tuyeres. The thermocouple, set permanently in the hot blast main just before it joins the bustle pipe, is electrically connected with a recorder controller. The latter has a separate circuit and through a system of electric contacts and relays, operates motor and gear mechanism which in turn controls the mixer valve.



CONSIDERABLE labor is avoided at the rear of the open-hearth furnace and at the pouring station by the use of oxygen for opening stubborn tap holes and bleeding cold heats through the pouring nozzles of ladles.

♦ ♦ ♦

Power generally required in overcoming pinion, gear and spindle friction on continuous mills runs from 12 to 15 per cent of the total power delivered, according to recent lubricating tests.

♦ ♦ ♦

At a sheet mill where packs of sheets are delivered to the cold rolling department by roller conveyors, an efficient brake mechanism is installed for stopping the loads at predetermined points near the roll stands. The mechanism is fixed beneath the rollers. Two brake arms, with four brake shoes on each arm, are forced against the rollers, thus creating a dead spot in the conveyor which brings the packs to an abrupt stop within 2 inches of a given point without shifting the sheets.

♦ ♦ ♦

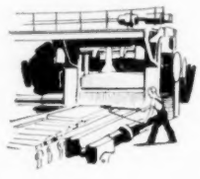
Exactness of air pressure and volume control recently has been provided at a bessemer plant in the Chicago district by the installation of individual motor-driven centrifugal blowers and individual blast mains for each vessel in addition to pressure gages: volume meters, tachometers: and start, stop and speed regulation push buttons in the operator's pulpit. Higher quality and greater uniformity of product is claimed.

♦ ♦ ♦

Transferring 25-ton ingots from the soaking pits to the blooming mill approach table is to be accomplished at a large steel plant by a newly-developed ingot car equipped with a side-tilting pot. The crankshaft, which tilts the pot, is equipped with heavy springs for absorbing shocks in case of accidental falling of ingots during loading. The car is provided with standard couplings and airbrakes.

♦ ♦ ♦

To avoid localization of heat in forging ingots, a producer in the Chicago district employs oil-fired furnaces of the regenerative type. The burners fire alternately every 15 minutes. The flame passes along the side of the hearth and then to a port on the opposite side where the gases are exhausted to heat the regenerators. The latter provide preheated air for combustion at about 1800 degrees Fahr. Excessive scaling of the forging ingots is avoided by a balanced draft system which automatically controls the atmosphere at the heating zone.



A MEANS followed by a large platemaker for cleaning scale from the surface of alloy steel plates during the rolling operation consists of spraying water at the surface of the plate as it passes into the mill, scattering salt generously over the surface during the last few passes, and placing a piece of burlap soaked in brine on the scaly spots just before they come in contact with the rolls.

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

Steel Balls

Failures in high-chromium steel balls used in oil-line valves, by H. T. Morton, in Metal Progress, January, 1932, p. 27, 6 pp., 7 illusts.

Working parts of ball and seat valves used in pumps and oil wells must have a high impact value for long service. Fatigue failures cause flaking and cracking. Other troubles arise from corrosion from brines or erosion from grit. The article discusses some of the early troubles encountered with a 17 per cent chromium, 1 per cent carbon steel used for balls in these valves, and methods of correcting them.

The balls are forged by upsetting hot slugs from round bars, and investigation of corrosion pits occurring in service revealed that the trouble was due to internal defects in the steel and not to a surface defect from the bars. Porosity and hairlines in the stainless steel resulted in the production of seamy balls. Co-operation of the steelmakers assisted in improving the quality of the steel, and minimizing this problem.

Failure of stainless steel parts by cracking and flaking is closely linked with corrosion failures and requires homogeneous material free from internal defects to give it a high corrosion resistance, and proper heat treatment to give it maximum strength or impact resistance for its particular application.

—STEEL, 1-18-32

Continuous Lead Bath

Hardening of wheel hubs by continuous liquid heating process, by W. Gordon Park, in Industrial Gas, December, 1931, p. 21, 1½ pp., 3 illusts.

Limitation of rejects to about 1 in 300, appreciable reduction in manual labor, saving in floor space and other economies were effected by the installation of equipment for the continuous lead hardening of truck wheel hubs by a wheel manufacturer in the Detroit district. After the hubs are forged and machined they are placed on special carriers which convey them subsequently through a preheater, lead pot, oil bath, caustic soda spray and water bath, at a speed of about 90 hubs per hour. This method replaced a former batch method in which manual labor was required for most of the movement of material.

The lead pot used for hardening is 21 inches wide, 15 inches deep and 7 feet 6 inches long, supported on cast-iron top plates by means of flanges cast integrally with the alloy pot. Temperature of the lead bath is maintained at 1600 to 1670 degrees Fahr. Special types of transfer mechanisms and conveying equipment were designed to handle the parts and synchronize their movement with high-production requirements of the plant.

—STEEL, 1-18-32

Castings vs. Welding

Relative merits of steel castings and welded construction, by Raymond L. Collier, in The Foundry, Jan. 1, 1932, p. 41, 3 pp., 3 illusts.

Advantages and disadvantages of both steel castings and welding in construction work are presented, with no effort made to show up either process in an inferior light. Emphasis is placed upon the fact that proper design and proper procedure are essential to produce good castings and welded structures. Selection of a fabricating medium is somewhat complicated also by the possibility of using two or more castings welded together, or castings welded to rolled or forged sections. A judicious study of the service requirements usually will furnish the correct answer to questions involving choices from among several alternative methods.

Whatever the merits or disadvantages inherent in steel castings and welded construction, there can be no doubt the cast steel is an exceptionally good material for construction, and that welding, properly used, is quite satisfactory and has a wide range of application.

—STEEL, 1-18-32

Hardening Method

A new method of hardening bearing surfaces, in Automobiltechnische Zeitschrift (Germany), Sept. 20, 1931, p. 587, 1 pp., no illusts.

The Doppel-Duro process for hardening bearing surfaces of crankshafts is described and compared with case hardening and nitriding processes. Crankshafts to be hardened are set up in a lathe adapted to the purpose, and turned over at the rate of ¾ to 1 revolution per minute, depending upon the diameter of bearing pins. Meanwhile a wide oxyacetylene flame is directed against the surface to be hardened, the shaft being quenched quickly after it has been heated the proper length of time. Thickness of the hard layer may be made as much as 0.236-inch. A chrome-molybdenum steel is required. Although a slight amount of carbon absorption has to be taken into account, it is claimed that this is less than that encountered in nitriding or case hardening shafts.

Advantages cited, aside from the fact that a higher quality steel is required, are lower cost, less elaborate equipment and adaptability to being set up in the production line of a shop. No subsequent straightening of the shafts is necessary as the temperature is not sufficient to cause internal strains. Cost of the process is said to be about one-third less per unit of surface hardened than for ordinary case hardening.

—STEEL, 1-18-32

Cast-Iron Dies

Nickel-chromium cast iron dies, discussed by Herbert Chase in American Machinist, Jan. 7, 1932, p. 11, 3½ pp., 3 illusts., 1 table.

Cast iron, alloyed with nickel and chromium, is employed with considerable advantage in dies for stamping, pressing and in some cases for forging operations. It has been used in working both ferrous and nonferrous sheet. Dies made from nickel-chromium cast iron cost less initially than hardened steel dies and in many cases are longer lived because of the wear-resisting surface. They possess a fine grain, take a high polish and largely eliminate the galling of pressed parts.

One of the major economies realized by the use of such a metal for bending or forming dies is that it can be cast close to shape, thus effecting economy in machine work, since much less metal has to be removed, as a rule, in comparison with steel dies. Fourteen nickel-chromium cast iron analyses are tabulated and their adaptability to various types of dies considered.

—STEEL, 1-18-32

Machine Tools and Plant Equipment

«Without machine tools modern machinery could not be built.»
—Joseph W. Roe

High Pressure Typifies Die Casting Machine

Lester Die and Machine Co., 2810 Superior avenue, Cleveland, recently developed a die casting machine which is claimed to differ radically from the conventional type in that the molten alloy is injected into the die by direct action of a pump under pressure much greater than that ordinarily employed. The manner in which this is accomplished not only allows for complete scavenging of the air from the cavity of the mold but also insures complete absence of air in the direct injection of the metal. The increased pressure also makes it possible to maintain the working temperature of the metal at a lower point, thereby aiding in securing a better finish of the casting.

Reed-Prentice Corp., Worcester, Mass., is manufacturing and marketing the new machine. A view of the 7H model is shown in the accompanying illustration. This unit is of the plunger type in which the metal is retained at a minimized temperature through an automatic temperature control. It can be operated at seven speeds, ranging from 150 to 450 castings per hour. Semi-automatic control is available when the work is difficult enough to require it.

The plunger mechanism for forcing the metal into the die is the direct result of some 20 odd years of experience on the part of Nathan Lester in the design, construction and operation of die casting machines. The metal is forced in at correct pressure and velocity to allow for complete removal of air present in the cavity of the mold. This facilitates freedom from swirl flow marks, making it possible to obtain smooth frosted white surfaces which readily lend themselves to plating.

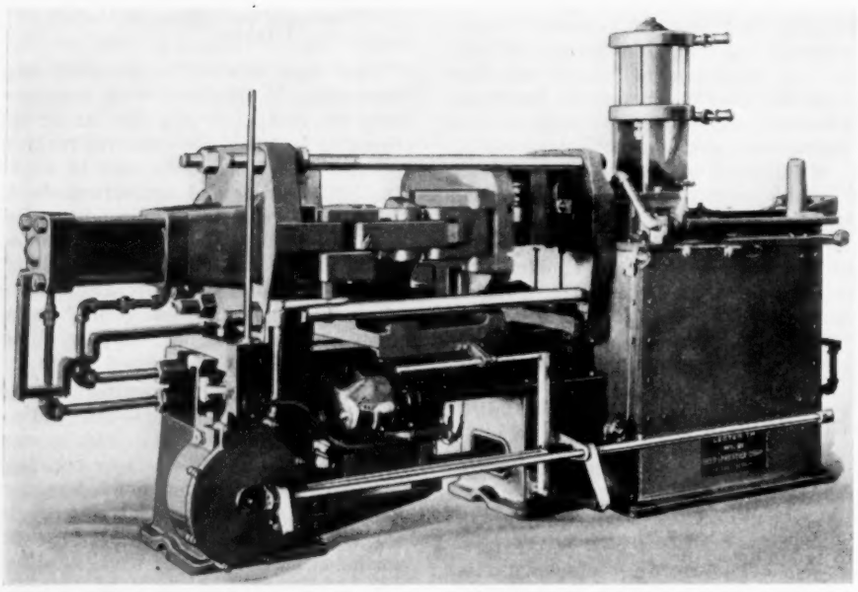
Prevents Injection of Slag

Pressures in the neighborhood of 1500 pounds per square inch are employed to force the molten white metal into the die. The metal is drawn into the pumping mechanism about three inches below the surface thus preventing slag from being carried into the mold.

Design of the machine adapts it for ordinary jobbing practice where it is necessary to change dies in a limited space of time. The gooseneck mechanism is not interlocked with the die opening mechanism so that there is no adjustment in that respect when setting up various size dies. Discrepancies in lengths of nozzles are compensated for automatically in the design of this mechanism, without further adjustment being required.

Safety devices have been incorporated so that it is impossible for the plunger to force metal into the cavity of the die until the front section of the machine holding the die has been properly locked by the hydraulic cylinder, and the nozzle, which also is controlled hydraulically, is in place against the die. A control motor in conjunction with the seven-speed gear box controls a cam mechanism which operates the hydraulic valves and metal pump compressed air valve in proper sequence.

Die space of the 7H model ranges from 8 to 17 inches, height 4 feet 2 inches, length, 10 feet 8 inches, and width 3 feet 6 inches. The melting pot capacity is 500 pounds with a melting rate of 1000 pounds of zinc per hour.



Lester die casting machine manufactured by Reed-Prentice Corp. employs pump to force metal into die under high pressure

◆

A. C. Automatic Starter Is Explosion Proof

Cutler-Hammer Inc., 320 North Twelfth street, Milwaukee, has announced a new, explosion-proof, across-the-line type, alternating current automatic starter, designed in accordance with the specifications of the underwriters' laboratories for class 1, group D hazardous locations. These specifications include applications where explosive gas or dust is prevalent in the atmosphere, such as dry cleaning and dyeing plants, gas plants, gasoline filling stations, coke plants, starch and flour mills, oil fields, refineries, chemical plants, etc.

The new unit is of the air break type—all contacts are made and broken in the air. There is no oil tank. The heavy cast-iron, explosion-proof, enclosure is designed to prevent any explosion which might occur within it, from igniting the surrounding explosive atmosphere. Construction of the starter proper consists of a standard 3-pole, magnetic contactor, with thermal overload relays to protect the motor

from burnout due to overloads. Enclosing case is of the "split" type, which, when opened, allows easy access to all parts of the starter. These starters are designed in three sizes, to take care of motors up to 30 horsepower, 220 volts; and 50 horsepower, 440 or 550 volts. The new unit is depicted in the right hand outside column.

◆

Welded Piping Produced for Wide Application

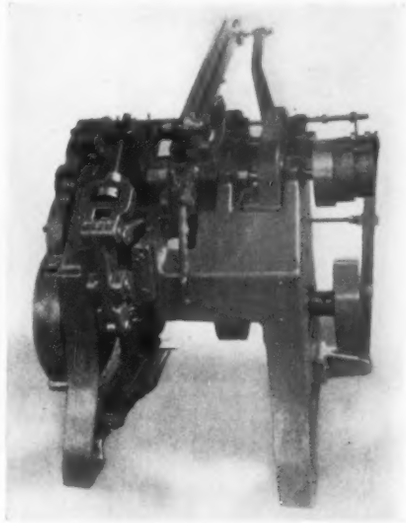
Semet-Solvay Co., 61 Broadway, New York, is manufacturing welded piping for use in handling gas, air, water, steam, pulverized substances, oil and chemicals. It is being produced of steel having various commercial analyses, and also of a number of special purpose alloys.

Steel piping up to and including 14 inches in size is regularly made from standard lap welded tubing, but may be made from standard steel pipe or from steel plate. Larger sizes are regularly made from

Semet-Solvay welded fitting built by standardized shop methods

tank steel plate, or plates rolled from other metals which permit welding, when specified. The company builds square, oblong and oval pipe as well as round, and is equipped to produce piping products true to specifications that will meet almost any need. The accompanying illustration shows a welded fitting of special design, built by standardized shop methods.

Pipe can be made with plain ends for butt welding or with beveled ends for a V weld, in accordance with individual requirements. Branches, elbows, angles, bends and reducers are furnished in any design, radius, or combination of shapes and sizes. Whenever possible, the company's layouts provide for fabricating straight lengths of pipe, branches, elbows and reducers



Thread rolling and trimming machine built by V & O Press Co.

into single pieces ready for erection. This eliminates large numbers of field joints and keeps the cost of assembly and erection at the lowest obtainable point.

◆

Develops a Thread Rolling, Trimming Machine

V & O Press Co., Union Turnpike, Hudson, N. Y., has announced the development of an automatic thread rolling and trimming machine, designated No. 202½. It is designed to automatically handle metallic shells up to 6-inch diameter and 6 inches in length. The trimming attachment has the capacity to trim 1/16-inch thick mild steel as well as other metals in proportion. Parts somewhat larger may be worked by hand feeding.

A single drive is used in this unit, the two clutch shafts and rocker arm being operated from an auxiliary shaft and all driven through the same train of gears. The rocker arm is pivoted on trunnions instead of directly on the driving shaft. It is actuated by an adjustable toggle motion, insuring smooth threads of uniform depth and permitting a variation in the number of revolutions, during which the work is held under pressure, thus increasing the range of work that may be handled.

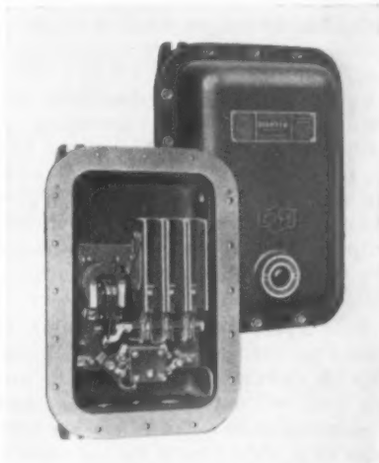
The rocker arm is brought into action by pressure on a foot treadle connected with the clutch which acts instantly. If the treadle is held down the rocker arm will run continuously. Spindles extend beyond the front of the bed, giving the operator free excess to the chucks when necessary to feed by hand. The spindle carrying the upper chuck is adjustable in and out, facilitating the matching of threads, etc.

Finished work is ejected from the chucks automatically, thereby increasing speed of operation. The trimming attachment may be easily disconnected when the machine is to be used for threading or other work. In addition to thread rolling and trimming, beading, knurling, scoring, and flat side rolling operations may be performed with this machine, the tools required being inexpensive and quickly interchangeable.

◆

Relay Pressure Valve Gives Accurate Control

Bailey Meter Co., 1050 Ivanhoe road, Cleveland, recently developed a relay pressure valve, designated style G and designed to give extremely accurate pressure control of steam, water or gas lines. Briefly, the new unit, shown in the illustration on page 36, controls the pressure within close limits by regulating the movement of a sylphon operated or piston-operated throttle valve installed in the line in which the pressure is to be controlled. A minute change in the controlled pressure will result in a relatively



Cutler-Hammer alternating-current, explosion-proof automatic starter

large change in the motive pressure used to operate the regulating valve.

Referring to the illustration, the handle at the top is used to balance the force of the springs against the controlled pressure which is indicated on the pressure gage at the

left. The relay pressure is shown by the gage at the right. Application of the valve is unlimited as it can operate one valve, a series of valves, or pistons.

◆

Solder Suited to Aluminum And Other Metals

Allied Research Laboratories, Glendale, Calif., recently has developed an aluminum and all metal solder for use in repairing aluminum, pot metal, die castings, cast iron and steel. Alumaweld, as it is called, is claimed to have a tensile strength of 12,000 pounds.

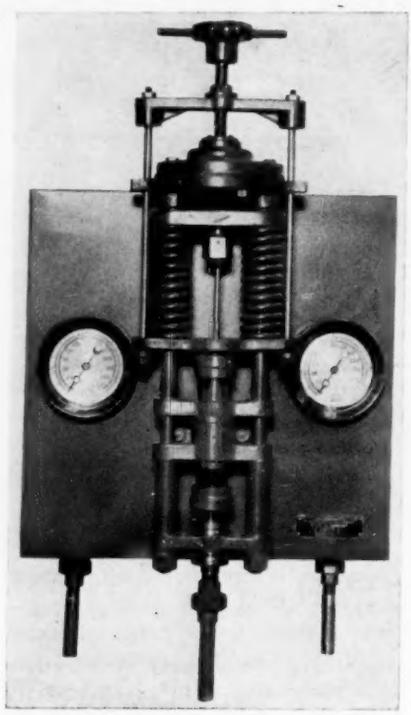
The material, according to the manufacturer, has been used successfully to repair steam and water pipe systems, cylinder heads and crankcases on automobiles and tractors, etc. It is applied with an ordinary soldering iron or blow torch and melts at a low temperature. Once applied, however, it requires a temperature from 50 to 250 degrees higher to melt again. The solder is ductile and will take a good polish over which chromium or other plating may be applied. It will not corrode under ordinary circumstances and cannot possibly rust.

◆

Automatic Valve Controller Is Motor Operated

Automatic Temperature Control Co. Inc., 34 Logan street, Philadelphia, has added to its line of automatic valve controllers a multi-position motor-operated controller, designated type 303. The user can connect this unit to the actuating instrument so as to obtain either two or three-postion operation, depending upon the results desired. When wired for three-position operation either three or four valve positions can be obtained by a simple mechanical adjustment of the limit switch.

This type, size B, controller as shown in the accompanying illustration, is mounted with one air and two fuel oil valves—desirable practice where fuel oil burners on both sides of a wide hearth furnace are to



Bailey Meter Co. relay pressure valve designed for accurate control

be handled with one controller, for with two fuel valves the supply can be adjusted individually to both sets of burners, thus insuring equal fuel distribution to both sides of the furnace.

Printed matter on type 303 controller lists several types of furnaces where the high and low valve settings are necessarily wide apart in order to handle on continuous type furnaces, both maximum load and standby conditions, or on batch type furnaces for quickly heating up and for holding conditions. With the ability to adjust its valves to one or two intermediate positions, this new controller can hold such furnaces under close temperature regulation and do it entirely automatically. In order to permit selection based on power required by the valves to be handled this new controller is made in three sizes.

Two or more valves can be operated as a unit so that by proper selection fuel and air valves can be adjusted to hold a constant atmosphere when operated to maintain desired furnace temperature.

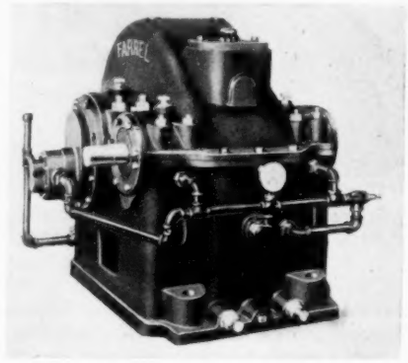
◆

Designs New Series of High Speed Gear Units

Farrel-Birmingham Co. Inc., Ansonia, Conn., recently announced that its Buffalo division has introduced a new series of high speed gear units suitable for increasing the speed of a driven unit as well as reducing speed. The accompanying illustration depicts one of the smaller sizes of this new series.

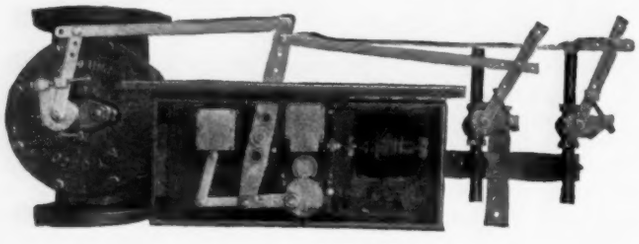
These gear units are especially adapted for connecting diesel or gas engines to high speed centrifugal pumps, and for similar service. They have a pair of herringbone gears with accurately generated continuous teeth. Materials used for the gears are selected to prevent wear and fatigue. The pinions are made of forged alloy steel integral with the shaft, heat treated to a hardness of 250-300 brinell. Each gear wheel consists of a forged steel ring heat treated to 175-200 brinell, mounted on a semisteel center.

Forced lubrication is provided for all bearings and spray lubrication for the gear teeth. The gears are not allowed to run in a bath of oil and consequently the excessive generation of heat is avoided. As can be seen from the illustration, the gear unit is self-contained, having its own lubricating pump, oil tank, cooler where necessary, lubricating fittings consisting of a pressure gage and a relief valve.



High speed gear unit manufactured by Farrel-Birmingham Co. Inc.

Bearings are steel or bronze shells lined with high grade babbitt. The gears, although of herringbone construction, are not allowed to have axial float, in fact thrust collars are provided to protect the gears from any axial thrust.



MULTI-POSITION, motor-operated valve controller introduced by Automatic Temperature Control Co.

It's Easier to Subtract *than to* Add . . *and the* Result *is the* Same

IF you could add 3 to 10% to selling price it would be fine for profits. But what would customers think and do? Subtract, then, from production costs . . . and you have the same chance to earn a profit.

Many manufacturers are letting G. P. & F. help them make subtraction do the same thing as addition. The shell drawn from stainless steel shown, is an example of what can be done.

The use of G. P. & F. stampings cuts material and finishing costs . . . and eliminates machining costs entirely. Better still, it adds sales appeal . . . lighter weight, increased convenience, durable modern finishes, and beauty of design.

G. P. & F. has 50 Years' Experience

More than half a century of experience . . . an ever-growing clientele including many of the largest manufacturers of the country are guarantees that G. P. & F. engineering and design service is almost certain to boost your profits. A few moments of your time is the only cost of finding out what G. P. & F. stampings will do for your profits and your product. Just send a sample or drawing and let us recommend. No obligation whatever.

Drawn from Stainless Steel

Shell drawn by G.P.&F. from 16-gauge stainless steel. Two parts of shell are welded together after assembly.

GEUDER, PAESCHKE & FREY CO.

Sales Representatives in Principal Cities in All Parts of the Country

1437 West St. Paul Ave., Milwaukee, Wis.

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City ..... *State* .....

Steel Casting Makers Operate at 13 Per Cent

Producers of steel castings operated at 13.7 per cent of their capacity in November, according to the department of commerce. Figures follow:

1930	Total bookings tons	Per cent of capacity	Total production tons	Per cent of capacity
Nov.	48,123	33.3	44,290	30.7
11 mo.	835,046	52.6	945,582	59.6
Dec.	49,387	34.2	46,290	32.1
Year	884,433	51.1	991,872	57.3
1931				
Jan.	46,810	32.1	46,294	31.8
Feb.	40,320	27.7	49,548	34.0
March	48,184	33.1	56,755	39.0
April	46,039	31.6	48,282	33.2
May	39,052	26.8	43,154	29.6
June	26,136	18.0	35,018	24.1
July	32,869	22.6	31,751	21.8
Aug.	27,458	18.9	30,186	20.7
Sept.	23,073	15.8	26,948	18.5
Oct.	22,851	15.7	24,083	16.5
Nov.**	20,000	13.7	23,109	15.9
11 mo.	372,792	23.3	415,128	25.9

**Preliminary.

Shape Fabricators At 22 Per Cent Output

Bookings of fabricators of structural steel dropped sharply in November, as the estimate of the department of commerce shows, new orders being at only 21.8 per cent of capacity:

	Bookings		Shipments	
1930	Tonnage	Per cent capacity	Tonnage	Per cent capacity
Nov.	151,200	37.8	195,200	48.8
11 mo.	2,536,800	57.7	2,818,800	64.1
Dec.	152,800	38.2	168,400	42.1
Year	2,689,600	56.0	2,987,200	62.2
1931				
Jan.	162,400	40.6	172,000	43.0
Feb.	158,400	39.6	166,400	41.6
Mar.	184,400	46.1	151,200	37.8
April	292,800	73.2	158,400	39.6
May	152,800	38.2	148,000	37.0
June	177,200	44.3	162,400	40.6
July	159,200	39.8	181,600	45.4
Aug.	124,400	31.1	168,800	42.2
Sept.	196,800	49.2	150,000	37.5
Oct.	110,000	27.5	145,600	36.4
Nov.	87,200	21.8	111,600	27.9
11 mo.	1,805,600	41.0	1,716,000	39.0

By-Product Coke Recedes From October Gain

Recession in output, offsetting the slight gain shown in October, featured the coke industry in November. Decline in the by-product rate occurred chiefly in merchant plants. One new by-product installation was placed in operation during November, the Ironton By-Product Coke Co., adding a battery of 25 Semet-Solvay regenerator ovens at Ironton, O. In all, 86 plants were active in November and these operated at about 45 per cent of capacity, according to figures compiled by the department of commerce:

In Net Tons

1930	By-product coke	Beehive coke	Total coke
Nov.	3,137,110	167,500	3,304,610
1931			
Oct.	2,389,056	105,400	2,494,456
Nov.	2,276,283	98,300	2,374,583

Orders for Steel Plates Mark Low in November

Orders booked for fabricated steel plate by 51 interests reporting to the department of commerce were the lowest of any month in 1931 during November, according to the following:

In Tons

1930	Total	Oil storage tanks	Blast furnaces	Miscellaneous
Nov.	33,151	9,965	179	14,632
11 mo.	442,648	110,336	10,222	201,278
Dec.	26,787	5,118	135	13,227
Year	469,435	115,454	10,357	214,505
1931				
Jan.	27,518	2,598	111	20,845
Feb.	24,438	3,585	75	16,245
Mar.	31,056	2,538	833	21,697
April	29,916	7,749	25	17,783
May	26,210	2,411	230	20,370
June	22,806	4,679	356	15,817
July	27,261	4,136	51	18,785
Aug.	24,282	1,138	125	18,331
Sept.	33,473	4,024	254	18,692
Oct.*	20,839	1,955	200	16,336
Nov.	18,268	1,755	401	15,058
11 mo.	286,067	36,568	2,661	199,959

New Low Revealed in November Auto Output

Due mainly to loss in assembly of passenger cars, November output of automobiles at 68,867 units made a low since the department of commerce has been tabulating production of the industry. Total of 2,268,197 assemblies for 11 months of 1931 makes the year to Dec. 1 lag almost 1,000,000 cars behind 1930 and 3,000,000 behind 1929. Monthly comparisons follow, including Canadian figures:

	—United States—			Canada
1930	Total	Passenger cars	Trucks	Total
Nov.	135,754	102,358	33,787	5,407
11 mo.	3,200,285	2,654,976	537,798	148,570
Dec.	155,701	122,748	31,528	5,622
Year	3,355,986	2,805,516	541,534	154,192
1931				
Jan.	171,851	137,805	33,534	6,496
Feb.	219,939	179,890	39,520	9,871
Mar.	276,341	230,835	45,096	12,993
April	336,939	286,252	50,022	17,159
May	317,163	271,135	45,688	12,739
June	250,657	208,955	41,342	6,835
July	218,961	182,927	35,854	4,220
Aug.	187,197	155,321	31,772	4,544
Sept.	140,566	109,087	31,338	2,646
Oct.	80,142	57,764	21,727	1,440
Nov.	68,867	48,185	19,683	1,247
11 mo.	2,268,197	1,870,302	393,004	4,891

Truck, Tractor Shipments Near October Level

November shipment of electrical industrial trucks and tractors stepped up slightly over October, yet remained near the low for 1931. Recession is to be noted chiefly in domestic shipments, according to the department of commerce:

		—Shipment—	
1930	Total	Domestic	Export
November	45	36	9
11 mo.	1,172	1,038	134
December	51	42	9
Year	1,191	1,050	141
1931			
January	38	33	5
February	56	50	6
March	93	84	9
April	71	48	23
May	69	69	.....
June	75	50	25
July	78	63	15
August	50	37	13
September	43	39	4
October	17	16	1
November	21	19	2
11 mo.	611	508	103

Malleable Castings Drop to New Bottom

Malleable castings produced in November totaled only 17,678 tons, the lowest monthly figure of 1931 or 1930. Department of commerce reports show that 127 plants reporting the following data, operated at 18.3 per cent of capacity during the month. November's low compares with the 1930 monthly low of 27,114 tons and the 1929 low of 46,459 tons. A brief comparison follows:

1930	Output, tons	Shipments, tons	Orders booked, tons	Per cent operated
Nov.	27,114	25,974	27,451	27.8
11 mo.	484,572	492,327	449,392	44.7
Dec.	30,431	27,474	26,433	31.1
Yr.	515,003	519,801	475,925	43.6
1931				
Jan.	31,267	31,536	32,676	31.5
Feb.	33,587	32,663	32,566	34.4
March	35,210	36,677	34,331	35.9
April	36,076	37,693	36,086	36.3
May	31,450	36,540	28,328	32.2
July	19,943	23,511	19,400	20.1
Aug.	18,531	20,513	18,494	19.0
Sept.	18,193	18,387	17,610	18.6
Oct.	20,123	17,484	18,145	20.5
Nov.**	17,678	17,888	18,542	18.3
11 mo.	285,895	301,024	278,354	26.5

**Preliminary.

Boiler Orders Are Less

November's orders for steel boilers totaled 491 units of 424,044 square feet, compared with orders for 672 boilers in October having an area of 467,375 square feet, according to the department of commerce. For 11 months of 1931, 7608 boilers have been bought; over the same 1930 period there were orders for 12,352 boilers.

Steel Demand Is More Encouraging

Operations Respond Again to Moderate Improvement, Up One Point to 26 Per Cent—Strong Efforts Made to Stabilize Finished Steel Prices

STEEL demand is more definitely on the upgrade, stimulated moderately by reviving confidence and the closer approach of seasonal influence. None of the major consuming groups exhibits a marked tendency toward improvement, but practically all are contributing in larger measure to the rising volume of steel orders. This has led to the second conservative increase in steelworks operations, the rate advancing 1 point to 26 per cent in the past week, with prospects for a further slight gain this week.

Encouraged by the outlook, steelmakers are building up resistance to pressure against prices, a determined effort being made to put heavy finished steel on a more remunerative basis. Leading producers are endeavoring to stabilize plates, shapes and bars at 1.60c, Pittsburgh, for ordinary buyers, with quotations at Cleveland, Chicago and Birmingham on a commensurate basis. In sheets and strip, however, price weakness persists, due mainly to competition for the more atractive offers from the automotive industry. In raw materials, prices appear a little steadier, except scrap, larger buying having developed lower levels.

Steelmakers consider as a practical certainty a much larger inflow of orders from railroads as revenue increases from recent freight advances, and the anticipated wage adjustment. Railroad rolling stock is reported in the worst condition since the 1922 shop strike; rail buying in the past two years was the lowest in 25 years; bad-order cars are the highest on record. New York Central's rail inquiry, out soon, probably will be for less than the 170,000 tons purchased last year. The Erie has closed for 31,377 tons. Northern Pacific has bought 150 hopper cars, and Western Fruit Express is expected to place 300 underframes shortly.

In the automotive industry no important plant is down, in contrast with a month ago when many were closed entirely. Chevrolet is leading, with 9000 units a week; Ford making 1600 of the revised 4-cylinder models, designated as "B" in sheet and strip orders. In numerous miscellaneous lines the trend is for the better: Demand for bolts, nuts and rivets at Pittsburgh is heavier; reinforcing steel for roadbuilding is more active; a net gain of three active blast furnaces is noted since Jan. 1.

General Motors' recent order for 100,000 tons of pig iron is influencing smaller consumers to cover, lake furnace sales being the largest since last fall. Substantial contracts for tin plate have been placed by Standard of New Jersey and Continental Oil; and the American Can Co. is about to close on a large order. The Shell Oil Co. has placed 40,000 tons in South Wales.

Shipments are being completed on a number of steel contracts which were not fully specified by the close of 1932. It is understood that if the United States Steel Corp. had not wiped off its books on Dec. 31 tonnage which had been carried along for some time with little prospect of being specified, its unfilled orders would have increased, instead of decreasing 198,538 tons to the lowest point since December, 1910.

Structural awards for the week, amounting to 20,000 tons, and reinforcing bar orders, 6000 tons, represent good advances from the preceding week. Pipe projects this year are expected to provide considerable tonnage; an inquiry is current for 35,000 tons of 20-inch steel pipe for a 200-mile line. Washington has purchased 4500 tons of cast iron pipe.

Reflecting the stronger tone in plates, shapes and bars, STEEL's finished steel composite is up 60 cents to $47.62, and the iron and steel composite is up 12 cents to $30.08. These are the first advances in these composites since last July. The scrap composite is down 12 cents, to $8.

Composite Market Averages

	Jan. 16	Jan. 9	One Month Ago (Dec., 1931)	Three Months Ago (Oct., 1931)	One Year Ago (Jan., 1931)	Ten Years Ago (Jan., 1922)
Iron and Steel Composite	$30.08	$29.96	$30.32	$30.74	$31.71	$33.35
Finished Steel Composite	47.62	47.02	47.74	48.22	49.30	50.54
Steelworks Scrap Composite	8.00	8.12	8.16	8.50	10.49	11.31

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, pipe, tin plate, nails, sheets, plates, shapes, bars. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	Jan. 16, 1932	Dec., 1931	Oct., 1931	Jan., 1931
PIG IRON				
Bessemer, del. Pittsburgh	$17.26	17.51	18.16	18.76
Basic, valley	15.00	15.00	16.50	17.00
Basic, eastern del. eastern Pa.	16.00	16.00	16.25	17.25
No. 2 foundry, del. Pittsburgh	17.26	17.51	18.16	18.26
No. 2 foundry, Chicago	16.50	16.60	17.20	17.50
*Southern No. 2, Birmingham	12.00	12.00	12.00	14.00
**No. 2X, Virginia furnace	18.00	18.00	18.00	18.25
**No. 2X, Eastern del. Phila.	15.76	16.01	17.26	18.26
Malleable, valley	16.00	16.10	16.90	17.50
Malleable, Chicago	16.50	16.60	17.10	17.50
Lake Superior, charcoal, del. Chi.	23.04	20.79	25.04	27.04
Gray forge, del. Pittsburgh	16.63	16.88	17.53	17.63
Ferromanganese, del. Pittsburgh	79.85½	84.79	89.79	89.79

*1.75-2.25 silicon. For local delivery. Northern shipments based on $10 to $11, Birmingham. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

COKE				
Connellsville furnace, ovens	2.25	2.30	2.40	2.50
Connellsville foundry, ovens	3.25	3.25	3.25	3.30
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	26.00	28.00	29.00	30.00
Sheet bars, open-hearth, Pitts.	27.00	28.00	29.00	30.00
Billets, open-hearth, Pittsburgh	27.00	29.00	29.00	30.00
Wire rods, Pittsburgh	37.00	35.00	35.00	35.00

	Jan. 16, 1932	Dec., 1931	Oct., 1931	Jan., 1931
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.60	1.60	1.60	1.65
Steel bars, Chicago	1.70	1.60	1.70	1.70
Steel bars, Philadelphia	1.81	1.89	1.89	1.94
Iron bars, Chicago	1.60	1.60	1.70	1.70
Shapes, Pittsburgh	1.60	1.50	1.60	1.60
Shapes, Philadelphia	1.65	1.69½	1.76	1.81
Shapes, Chicago	1.70	1.60	1.70	1.70
Tank plates, Pittsburgh	1.60	1.50	1.60	1.65
Tank plates, Philadelphia	1.69½	1.73½	1.80½	1.81½
Tank plates, Chicago	1.70	1.60	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.75	1.85	1.85	2.05
†Sheets, No. 24, hot, ann., Pitts.	2.25	2.40	2.40	2.35
Sheets, No. 24, galvan., Pitts.	2.80	2.90	2.90	2.90
Sheets, No. 10 blue anneal., Chi.	2.00	2.00	2.00	2.50
†Sheets, No. 24, hot, ann., Chi.	2.45	2.55	2.55	2.20
Sheets, No. 24 galvan., Chi.	2.95	3.05	3.05	3.05
Plain wire, Pittsburgh	2.20	2.20	2.20	2.20
Wire nails, Pittsburgh	1.95	1.95	1.90	1.90
Tin plate, per base box, Pitts.	4.75	4.75	4.75	5.00

†Comparisons are with old classification No. 24 black sheets.

SCRAP				
Heavy melting steel, Pitts.	$10.25	10.25	10.45	13.00
Heavy melting steel, eastern Pa.	7.50	7.65	8.20	10.50
Heavy melting steel, Chicago	7.00	7.50	7.75	10.00
No. 1 wrought, eastern Pa.	9.25	9.50	9.50	13.25
No. 1 wrought, Chicago	7.25	7.40	8.00	9.50
Rails for rolling, Chicago	10.50	10.00	10.50	13.00

Sheets

Automotive Demands Increase Moderately — Prices Continue Easy—Concessions on Black

SHEET PRICES, PAGE 43

Pittsburgh—Slight improvement in automotive demand for sheets and a moderate gain in inquiry give a better tone to the market. Automotive orders still are for relatively small lots and buying is somewhat spotty but a general improvement in total business is looked for over the next 30 to 60 days. Releases from the Ford Motor Co. continue light. Activity of other sheet consumers is little changed and specifications are for only immediate needs. Prices have developed no renewed strength although no additional weakness is noted following rather sharp concessions over the past several weeks. The minimum on hot-rolled annealed sheets continues 2.15c, the former maximum price of 2.40c having disappeared. Galvanized sheets continue 2.80c to 2.90c, blue annealed 1.75c to 1.85c and autobody 2.90c to 3.00c.

New York—Sheet prices are less irregular than recently, with the tone of the market improved.

Buffalo—Demand for full finished sheets has improved considerably, especially for furniture makers.

Philadelphia—Sheet consumption is light at unchanged prices. The tendency still is downward, although increasing resistance is noted in some grades. Blue annealed at 2.06c, Philadelphia, is subject to concessions where offered in competition with the continuous mill product.

Pennsylvania railroad will close Jan. 26 on a tonnage of sheets, and on some boiler tubes. The Edward G. Budd Mfg. Co., Philadelphia, has been awarded a contract at $49,530 for the steel for Pennsylvania automobile license plates.

Youngstown, O. — Specifications are being issued cautiously by automotive builders and partsmakers, though many small orders are coming from miscellaneous consumers. Demand for common black sheets is the backbone of the sheet trade here, most of the tonnage moving at 2.25c, Pittsburgh, though the range is 2.15c to 2.40c.

Cleveland—The trend is toward better demand, but price weakness continues to have a detrimental effect. Following solicitation by a sheet mill in the nearby Pittsburgh district for barrel stock business here black sheets have settled to 2.15c, Pittsburgh, and the former 2.40c base has disappeared. Vitreous enameling stock has been reduced $3 a ton to 3.10c for No. 20 gage and 2.60c for No. 10 gage.

Cincinnati—Releases from the automotive industry and from electrical refrigerator manufacturers, although steady have been light. Galvanized sheets are weak.

Chicago—Award of 1500 tons of black or galvanized sheets for the Chicago postoffice is said to have been made to a local producer, although the contract has not been signed. The 500 tons for Kansas automobile license plates have been let to Continental Steel Corp. at 2.93c, delivered Topeka, Kans., without surcharge freight allowance, which would figure slightly under 2.35c, base. Other delivered bids were 2.99c. Local sheet mills are not adding fractional increases to delivered prices in the Chicago switching district to cover the surcharge.

St. Louis—Business has not improved since the first of the year, orders continuing small and almost entirely for immediate shipment. The Granite City Steel Co. has announced its new St. Louis delivered prices which include the freight surcharge now in effect. Exclusive of the surcharge the prices of the principal grades are about 6 per cent lower than during the last quarter.

Current Finished Steel Prices

Delivered prices subject to freight surcharge corrected to nearest ½c. Prices in cents per pound unless otherwise stated

Steel Sheets

HOT ROLLED No. 10

Pittsburgh, base	1.60c to 1.70c
Gary, Ind. Harbor, base	1.70c to 1.80c
Chicago, del.	1.75c to 1.85c
New York, del.	1.95c to 2.00c
Birmingham, base	1.80c to 1.85c

BLUE ANNEALED NO. 9-10

Pittsburgh, base	1.75c to 1.85c
Chicago, district mills	1.95c
Chicago, delivered	2.00c
Philadelphia, del.	2.06c
New York, del.	2.10c
St. Louis, delivered	2.12½c
Birmingham	2.00c
San Francisco c.i.f.	2.35c

HOT ROLLED ANNEALED NO. 24

Pittsburgh, base	2.15c to 2.35c
Gary, Ind. Harbor, base	2.40c to 2.50c
Chicago, del.	2.45c to 2.55c
New York, del.	2.50c to 2.65c
Philadelphia, del.	2.46c to 2.61c
Birmingham, base	2.45c to 2.55c
St. Louis, del.	2.62½c
San Francisco, c.i.f.	2.90c

GALVANIZED NO. 24

Pittsburgh, base	2.80c to 2.90c
Gary, Ind. Harbor, base	2.90c to 3.00c
Chicago, del.	2.95c to 3.05c
Philadelphia, base	3.11c
Birmingham, base	3.05c
St. Louis, del.	3.17½c
San Francisco, c.i.f.	3.40c

AUTOMOBILE NO. 20

Pittsburgh, base	2.90c to 3.00c

FURNITNRE

Pitts., No. 10 heavy	2.65c
Pitts., No. 20 light	3.25c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.55c to 2.65c
Gary base	2.65c to 2.75c
St. Louis, del.	2.92½c

HEAVY COLD ROLLED NO. 10

Pittsburgh base	2.25c to 2.35c
Gary, Ind. Harbor, base	2.35c to 2.45c
Chicago, del.	2.40c to 2.50c
Philadelphia, del.	2.56c to 2.66c
New York, del.	2.60c
St. Louis, del.	2.62½c

COLD ROLLED NO. 20

Pittsburgh, base	2.70c to 2.95c
Gary, Ind. Harbor, base	2.95c to 3.05c
Chicago, del.	3.00c to 3.10c
Philadelphia, del.	3.16c
New York, del.	3.20c
St. Louis, del	3.22½c

Tin and Terne Plate

Prices per 100-pound box Pittsburgh

Tin plate, coke base	$4.75

Gary, Ind., base 10 cents higher

Long ternes, 24, unassorted, 2.90c to 3.00c

Wire Products

(Prices apply on straight carloads. Mixed and joint carloads take 10 cents higher price; pool carloads 25-cent advance; less carloads 40-cent advance.)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.95
Cement coated nails	1.95
Galvanized nails	3.95

(Per pound)

Polished staples	2.50c
Galvanized staples	2.75c
Barbed wire, gal.	2.60c
Annealed fence wire	2.35c
Galvanized wire	2.80c
Woven wire fencing, (9-11 ga.)	$55.00
(12½ ga. and lighter)	$60.00

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind. Chicago, $1 over Pitts-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Steel Plates

Pittsburgh, base	1.50c to 1.60c
Philadelphia, base	1.69½c to 1.79½c
New York, delivered	1.80c
Boston, delivered	1.92c to 2.02c
Chicago, base	1.70c
Cleveland, del.	1.80½c
Lackawanna, N. Y., base	1.60c to 1.70c
Birmingham, base	1.75c
Coatesville, Pa., base	1.60c to 1.70c
Pacific Coast, c.i.f.	1.80c to 1.85c
St. Louis, del.	1.97½c

Structural Shapes

Pittsburgh, base	1.50c to 1.60c
Philadelphia, del.	1.65c
New York, del.	1.77c to 1.87c
Boston, del.	1.90½c to 2.00½c
Chicago, base	1.70c
Cleveland, del.	1.80½c
Lackawanna, N. Y., base	1.60c to 1.70c
Birmingham, base	1.75c
Pacific Coast, c.i.f.	2.05c
Do, wide flange	2.15c

Bars

SOFT STEEL

Pittsburgh, base	1.50c to 1.60c
Chicago, base	1.70c
Birmingham, base	1.70c to 1.75c
Lackawanna, N. Y., base	1.60c to 1.70c
Pacific coast, c.i.f.	2.05c
Cleveland, base, local del.	1.55c
Cleveland, base, out. del.	1.55c
Philadelphia, del.	1.81c
New York, del.	1.85c to 1.95c
Boston, del.	1.97c to 2.02c
Pittsburgh, cold finish	1.65c to 1.75c
Pittsburgh, forg. qual:	1.75c to 1.85c

RAIL STEEL

Chicago Heights	1.50c to 1.60c
Eastern mills	1.30c
Pittsburgh	1.30c to 1.35c

IRON

Chicago, base	1.60c to 1.65c
New York, delivered	1.85c to 1.95c
Philadelphia, delivered	1.84c to 1.94c
Pittsburgh, refined	2.70c to 4.20c

REINFORCING

Pitts., billet cut lengths	1.75c
Stock lengths, mill	1.60c
Chi., billet	1.75c to 2.00c
Chi., rail steel	1.55c to 1.80c
Chi., rail steel, bridges and culvert	1.40c to 1.50c
Philadelphia, cut lengths	2.06c
Cleveland, cut lengths	1.75c

Cold Finished Bars, Shafting

Base Pittsburgh, Chicago, Buffalo and Cleveland	2.00c
Shafting, turned and ground, Pittsburgh, Cumberland, Md.	2.35c to 2.80c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel

Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	23c	24.5c	27c	32c
Hot Strip	19c	20.5c	23c	28c
Cold strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist	$6.50 to 6.75 off
Carloads, Chicago dist	7.00 to 7.50 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bars, 2.65c, mill

S.A.E.	Alloy Diff.	
2000	0.25	4600 .20 to .30 Mo. 1.25-1.75 Ni. 1.05
2100	0.55	5100 .80 - 1.10 Cr. 0.45
2300	1.50	51.00 Cr. spring 0.20
2500	2.25	6100 bars 1.20
3100	0.55	6100 Spring .. 0.95
3200	1.35	Cr., Ni., Van. 1.50
3300	3.80	Carbon Van... 0.95
3400	3.20	9250 (flats) 0.25
4100 .15 to .25 Mo.	0.50	9250 (rds.,sq.) 0.50

Strip, Hoops Bands

Hot strip, to 6-in., Pitts.	1.50c to 1.60c
Do, 6 1/16 to 24-in., Pitts.	1.40c to 1.50c
Hot strip to 6 in. Chi.	1.65c to 1.70c
Do, 6 1/16 to 24 in.	1.55c to 1.60c
Cooperage hoop, Pitts.	1.60c to 1.70c
Do., Chicago	1.70c to 1.80c
Cold-roll. strip, Pitts., Cleve.	1.95c to 2.05c
Worcester, 3 tons, over	2.20c

Rails, Track Material

Standard rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$22.00 to $26.00
50 to 75	20.00 to 24.00
80 to 100	24.00 to 27.00
Light rails, 25-45, mills	$34.00
Light rails, Chicago	$36.00
Angle bars, mills	2.75c
Spikes, railroad, mills	2.60c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.60c
Spikes, boat, barge, Pitts.	2.90c
Track bolts, Pitts., steam	3.50c
Do, standard, jobbers	73 off list
Track bolts, Chicago	3.50c
Tie plate, mills	$37.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread.....73, 10 and 10 off

Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.

Eagle list .....73, 10 and 10 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts .....73, 10 and 10 off

Tire bolts .....60, 10 and 10 off

Stove bolts, 80-25-10 off in pkgs.; 80 25-10-2½ off in bulk.

Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished .....73, 10 and 10 off

HEXAGON CAP SCREWS

Milled .....80-10-10-5 off

Upset 1 in. diam. and smaller....85-10 off

SQUARE HEAD SET SCREWS

Milled .....80-5 off

Upset 1 in. and smaller .....80-10-5 off

Upset, larger than 1 in.....80-5 off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh.....2.50c

Do. less carloads, 5 kegs or over..2.75c; less than 5 kegs, 2.90c.

Chain, BB, BBB, 9/16-1½ in....33 1/3 off

Sheet piling, Pitts. 1.90c

Rivets

Struc., c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chicago	2.35c
7/16-in. smaller, Pitts.	70, 10 and 5 off
Chicago, Cleve.	70, 10 and 5 off

Bars

Better Sales and Specifications At Chicago, Automotive Leading—Prices Not Fully Tested

BAR PRICES, PAGE 43

Chicago—Automotive partsmakers in this area, at 60 to 70 per cent operations, continue to lead among consuming groups in bar products specifications. Both sales and specifications in the last week were the heaviest since late October, due chiefly to automotive buying. Bars are quoted 1.70c, mills, with no business attractive enough to tempt concessions. Mills are acquiring backlogs of deformed bars for next season's road work in several Mississippi valley and North Central states, all of which expect to do as much highway surfacing as in 1931. Implement specifications in the last week have been heavier, but production schedules may not hold up after March unless unexpected movement of finished implement stocks occurs. Bar mills are operating about 25 per cent.

Boston—Navy department closed bids this week on 203 tons of bar steel for Boston and Feb. 2 closes on 10,800 pounds of corrosion resisting bars for the Portsmouth navy yard.

New York—The bar market is improved although it is reflected in little additional tonnage. The usual price is 1.50c, Pittsburgh. Iron bars at 1.60c, Pittsburgh, are subject to shading.

Philadelphia—Steel bars are moving generally at 1.50c, Pittsburgh, with occasional small lots at 1.55c.

Pittsburgh—Improvement in bar demand is slight and somewhat below expectations. Better specifications are looked for from the automotive industry over the next 30 days although current orders usually involve only small lots. Larger buyers are quoted 1.50c, Pittsburgh, and no attempt has been made to re-establish 1.60c, which still is named to smaller users.

Youngstown, O.—Common steel bar consumers are slow in buying, confining activities to releasing specifications in limited tonnages for immediate needs. First quarter contracts for common bars are scarce, but some alloy bar purchases are being made by auto partsmakers who apparently are under pressure for deliveries.

Cleveland—Some fair size specifications from bolt, nut and rivet producers have aided bar mill interests. Merchant bars are 1.55c, Cleveland base.

National Metal-Art Mfg. Co., 54 Delmonico place, Brooklyn, N. Y., has increased its capitalization from $10,000 to $100,000.

Tin Plate Demands Bring In Heavier Tonnages

Tin Plate Prices, Page 43

New York—The market for tin plate is featured by substantial contracting by the Continental Oil Co., and Standard Oil Co. of New Jersey. The latter inquired for 100,000 base boxes, but is believed to have additional tonnage. The American Can Co. is expected to close immediately for its requirements.

Pittsburgh—Tin plate specifications lack improvement and mill operations are slightly lower at around 40 per cent. Few developments in the market as regards food packs are noted and canmakers are expected to proceed slowly in increasing their operations and in ordering tin plate. The market remains $4.75, Pittsburgh, per base box with some tonnage to be closed.

Hoist Business Improves

New York — Members of Electric Hoist Manufacturers' association report that the number of hoists ordered during December, 1931, increased 32.673 per cent as compared with the previous month. Value of such orders increased 20.596 per cent as compared with November. Shipments were 26.461 per cent smaller in December than in November.

Production of range boilers in November totaled 37,918 units, compared with 51,769 in October, according to the department of commerce.

Plates

Oil Storage Demands Take Some Tonnage in West—Market Generally Dull

PLATE PRICES, PAGE 43

Chicago—Despite the lack of important pipe line projects as an outlet for skelp, a mild revival is occurring in plates through oil refinery maintenance and extensions. Nearly 10,000 tons of storage plates has been let in the last two weeks. Besides 3500 tons awarded ten days ago, 6000 tons of tank storage plates has just been placed for East Texas and Pacific coast refinery work. Plates now are based on 1.70c, Chicago. Miscellaneous manufacturing demand is light. The plate mill of one producer was down several days last week.

New York—Plates are holding at 1.60c, Coatesville, Pa., with little business outstanding since the recent award of 500 tons by American Locomotive Co.

Norton Co., Worcester, Mass., has received an order for 40,000 porous plates for the Ward Island sewage project at New York.

Philadelphia — Buying of steel plates is light and little tonnage is pending. The usual figure is 1.60c, Pittsburgh, although 1.70c has not entirely disappeared.

Pittsburgh—Plate demand is dull, with little improvement in early prospect. Some barge business is scheduled for early closing but tank work is quieter and few inquiries are appearing. The market usually is 1.60c, Pittsburgh, higher prices finding less application than formerly.

Cleveland — Shipments of steel plates have been better in the past ten days than in the same period at the end of December. Specifying is based on improved trade sentiment and low inventories. The price situation, however, continues without clarification. For the municipal White sewage plant, American Construction Co., Cleveland, contractor, has bought 130 tons of plates from a local warehouse at 1.60c, base, Pittsburgh. Railroads with headquarters here closed on a few miscellaneous plate items last week.

Contracts Placed

650 tons, pontoons and dredge line pipe for United States engineer's office, Kansas City, Mo., to Chicago Bridge & Iron Works, Chicago.

300 tons, two fuel oil barges, army engineer, Cincinnati, to McClintic-Marshall Corp., Bethlehem, Pa.

200 tons, municipal tank for St. Louis county, Mo.; to Chicago Bridge & Iron Works, Chicago.

200 tons, metal partitions and shelving,

building, department of agriculture, Washington, to United Metal Products Co., Canton, O.

160 tons, plates and sheets, floors, partitions and shelving, U. S. assay office, New York, to Globe Iron Works Inc., New York.

130 tons, municipal sewage plant, White City, Cleveland, to Joseph T. Ryerson & Son Inc., Chicago, through American Construction Co., Cleveland, contractor. Also, 32 tons fabricated structural steel to same supplier.

Contracts Pending

700 tons, repairs to Great Lakes ore carriers for Chicago district shipyards.

300 to 1000 tons, depending upon type of construction, piling for dam No. 4, Monongahela river; Temple Construction Co., New York, low bidder on general contract.

100 tons, plates and shapes, water tank and tower, veterans' hospital, St. Petersburg, Fla.; R. D. Cole Mfg. Co., Newman, Ga., low.

100 tons, 121-foot sea-going tug, Port Supervisor, New York; Steppen Shipbuilding Co., Baltimore, low.

Wire Output Larger as Specifications Increase

Wire Prices, Page 43

Chicago—Wire products shipments are gaining steadily over December. Western production is up about 5 points as a result, mill operations being 25 to 30 per cent. Gains in specifications are due chiefly to orders from jobbers for building up merchant stocks. Contracting is so light that prices are nominal at $2 for carload lots of wire nails, and 2.25c, Chicago or western mills, for plain wire. Illinois highway department is constructing 200 miles of snow fence, and Century of Progress exposition has closed for 8000 feet of fencing.

Worcester, Mass. — Wire production shows few signs of definite trend. Shipments continue small under dull demand. Prices were strong. Plain bright wire to dealers is 2.30c, base, Worcester.

Philadelphia—Nails are steady and prices are untested at $1.95, Pittsburgh, and wire at 2.20c, Pittsburgh.

Pittsburgh — Wire specifications are quiet and although recent shipments have been fair, expiration of the date of coverage against old contracts is expected to result in quiet over the remainder of this month. Some jobbers anticipated their requirements a short time ahead so that a test of current prices in the form of new specifications is deferred. Current quotations of $1.95 on carload lots of wire nails and $37 on wire rods so far have been well observed. Manufacturers' wire at 2.20c is fairly steady but demand is slow to improve. Automotive buying is quiet but slightly more active than in December.

Railroads

Erie Awards 31,377 Tons Rails —New York Central Inquiry Is Awaited—Market More Active

TRACK MATERIAL PRICES, PAGE 43

New York—Several eastern railroads have closed on first quarter and first half steel needs, but in most instances they will specify less than the tonnages named as basis for bids. Norfolk & Western has placed its first quarter locomotive tire requirements with Railway Steel Spring Co., New York, and 2500 tons of shapes, plates and bars with Carnegie Steel Co., Pittsburgh. Delaware, Lackawanna & Western has closed with National Tube Co., Pittsburgh, for wrought steel pipe and boiler tubes, and with Carnegie Steel Co. for axles.

Inquiry for 1932 rails from the New York Central, while still not formally issued, is expected to be somewhat less than last year when 170,000 tons were bought from five different mill interests.

Pittsburgh—New buying continues to lag but prospects are favorable as a result of recent developments in the railroad situation. Specifications against old orders are light.

Cleveland—The Erie railroad has divided 31,377 tons of rails for 1932 rolling among Carnegie Steel Co., Illinois Steel Co.. and unstated mills. Through the two subsidiaries, United States Steel Corp. received 25,102 tons. Other inquiry is lacking from the railroads, though the Erie has inquiries out for bridge, repair and other work in western New York.

Chicago—While formal placing of the 300 underframes for Western Fruit Express has been further delayed, Northern Pacific has awarded 150 hopper coal cars to Pressed Steel Car Co. for building in the Chicago district. From 1800 to 2000 tons of finished steel will be specified. Northern Pacific also is building 500 underframes for box cars to be rebuilt at its St. Paul shops as a part of its 3000-car rebuilding program, costing about $4,500,000. At its South Tacoma, Wash., shops, 1000 refrigerator cars will be rebuilt, and 1000 box cars at the Brainerd, Minn., shops.

Great Northern railroad has released 1200 tons of rails, representing the unfilled portion of the Colorado Fuel & Iron Co.'s award from this road in 1931.

About 1000 tons in miscellaneous rail lots has been booked. Western roads have dismantled about 45,000 cars in the last year, many of them wooden. Rail buying in the last two years has been the lightest in 25 years, while deterioration of rolling stock is estimated to be the greatest since the shopmen's strike in 1922.

Car Orders Placed

Northern Pacific, 150 hopper cars to Pressed Steel Car Co., Chicago, to be built at Hegewisch, Ill., plant.

Reading Co., 30 coaches, to Bethlehem Steel Co., Bethlehem, Pa.

Car Orders Pending

Navy, 20 flat cars; ten new and ten used.

Rail Orders Placed

Erie railroad, 31,377 tons, allocated as follows: 18,955 tons, to Carnegie Steel Co., Pittsburgh; 6147 tons to Illinois Steel Co., Chicago; and 6275 tons to unstated mills.

Locomotives Pending

Alabama & Western Florida, one oil-burning locomotive.

Bolts, Nuts, Rivets Steady With Better Prospects

Bolts, Nuts, Rivets Prices, Page 43

Pittsburgh—Prospects for heavier specifications for bolts, nuts and rivets are slightly more favorable but recent demand lacks improvement over previous quiet activity. Railroads are quiet buyers, with little improvement expected. Occasional reports of price concessions in some districts continue, the general market remaining 73, 10 and 10 off for bolts and nuts and 2.25c, Pittsburgh, for large rivets.

Philadelphia — Sun Shipbuilding Co. is expected to close shortly on 400 to 500 tons of rivets. Rivets are holding at 2.00c and occasionally at 2.25c, Pittsburgh. Bolts and nuts are 73, 10 and 10 off with an additional 5 on some business.

Cleveland—Small rush orders for nuts, bolts and rivets are being placed by consumers who apparently allowed stocks to run down over the year-end. American Construction Co., Cleveland, contractor for the municipal sewage plant, is closing on 151 tons of bolts and rods.

Chicago—Specifications are similar to those of December, which reflect a gain over November. Further automotive orders have been released since the first of the year.

Structural Shapes

Structural Prospects Better —Current Lettings Largely Bridges—New York Central Program May Call for 200,000 Tons at New York—Prices Still Mixed

STRUCTURAL SHAPE PRICES, PAGE 43

New York — McClintic-Marshall Corp. is low on the route 25 viaduct, New Jersey, which may take a heavy tonnage of bar joists. Bids were taken on several alternates. The largest erecting job in the East, Radio City, is progressing rapidly with approximately 70,000 tons having been routed through the American Bridge Co. shops. Work on the New York Central west side program is being held up, including superstructure on the St. John's Park terminal. This is estimated to take 50,000 tons and the entire project about 200,000 tons. Work has not been abandoned, but is subject to delay. Subway plans are also being held in abeyance.

Structural steel awards in 1931 totaled 370,300 tons, against 467,553 tons in 1930, according to the New York Structural Steel Board of Trade.

Boston—Several moderate size projects are about to be placed, including the department of public works building and federal work at Rutland and Bedford, Mass. Several small post office jobs are also up. Prices are steadier, but are not generally tested. Pending bridge requirements are off.

Philadelphia—Only a small pickup is noted in structurals, plain material being easy at 1.60c, eastern mill.

Pittsburgh — Despite continued quietness in fabricated structural awards the outlook is favorable in view of proposed work. Plain shapes continue 1.50c to 1.60c.

Cleveland—Local building still is at low ebb, but bridge and federal work provides some bidding. A bridge at Niles, O., will take about 450 tons and will be bought at Warren, O., Trumbull county seat. Bids on a 275-ton bridge, Lake county, Willoughby, O., go to the state at Columbus, O., Jan. 22. A. W. Kutsche & Co., Detroit, have been awarded the Youngstown, O., postoffice and will buy 440 tons of shapes Jan. 18. Shapes range from 1.50c to 1.60c, Pittsburgh base.

Chicago—At least one more unit of the Marshall Field Estate building, Chicago, may be let in the next few months. The first unit of 25,000 tons is under construction. Century of Progress exposition buildings are proceeding, but steel requirements are light. Plain material is quoted 1.70c, Chicago, but shipments now are largely against lower price contracts. Awards, virtually all bridge work, are 8000 tons.

Contracts Placed

4500 tons, highway bridges in Indiana and Illinois, to Vincennes Bridge Co., Vincennes, Ind., and Mississippi Valley Structural Steel Co., Decatur, Ill.

2675 tons, library, Columbia university, New York, to McClintic-Marshall Corp., Bethlehem, Pa., through Marc Eidlitz & Son, contractors.

2500 tons, plates, shapes and bars, first-quarter requirements, Norfolk & Western railroad, Roanoke, Va., to Carnegie Steel Co., Pittsburgh; bids of Dec. 30.

2400 tons, transmission towers, Pennsylvania Water & Power Co., Safe Harbor, Pa.-Perryville, Md., line, to Blaw-Knox Co., Pittsburgh.

1100 tons, transmission tower material for Mexico, to unstated fabricator.

885 tons, I-beam spans, Illinois, to International Steel & Iron Co., Evansville, Ind.

825 tons, highway bridges, Ohio, to various fabricators; Fort Pitt Bridge Works Co., Pittsburgh, taking 500 tons.

600 tons, pontoons, United States engineer's office, Kansas City, Mo., to Chicago Bridge & Iron Works, Chicago.

600 tons, highway bridges in Oklahoma, to J. B. Klein Iron Foundry Co., Oklahoma City, Okla.

500 tons, additional highway bridgework in Missouri, to Muskogee Iron Works, Muskogee, Okla.

450 tons, public school 163, New York, to J. Klein Iron Works Inc., Queens, N. Y., through Cauldway Inc.

400 tons, highway bridge, Cape Girardeau, Mo., to Stupp Bros. Bridge & Iron Co., St. Louis.

275 tons, sewage treatment plant, New Jersey, to Paterson Bridge Co., Paterson, N. J., through Northeastern Construction Co.

250 tons, sheet piling, First National Bank, Wall street and Broadway, New York, to Bethlehem Steel Co., Bethlehem, Pa.; Thomas Crimmins Contracting Co., sub-contractor.

232 tons, state bridges, Le Flore county, Oklahoma, to Virginia Bridge & Iron Co., Roanoke, Va.; J. N. Keliher, Little Rock, Ark., contractor. Concrete Engineering Co., Oklahoma City, Okla., awarded 40 tons of reinforcing bars.

200 tons, standpipe, St. Louis County Water Co., St. Louis, to Chicago Bridge & Iron Co. Works, Chicago.

200 tons, highway bridge, Mt. Vernon, Ill., to Vincennes Bridge Co., Vincennes, Ind.

180 tons, bridge, Liberty-Leon county, Florida, to Austin Bros. Bridge Co., Atlanta, Ga.

180 tons, addition, Boyertown Burial Casket Co., Bronx, New York, to McClintic-Marshall Corp., Bethlehem, Pa., through I. Thompson.

163 tons, bridge, Rock creek park, Washington, to McClintic-Marshall Corp., Bethlehem, Pa.

140 tons, municipal building, Mount Kisko, N. Y., to Harris Structural Steel Co., New York, through O'Brien & Kinkle.

117 tons, bridge, Monroe, Mich., for Michigan state highway department, to R. C. Mahon Co., Detroit.

110 tons, school, Bellview, Del., to Bethlehem Fabricators Inc., Bethlehem, Pa.

100 tons, approximately, shapes and bars, high school, Tiltonville, O.; 80 tons shapes to Burger Iron Co., Akron, O., and 10 tons reinforcing to Ohio Steel Service Co., Cuyahoga Falls, O., through Wendling Bros., Dover, O., contractors.

100 tons, bridges, Colquitt county, Georgia, to Virginia Bridge & Iron Co., Roanoke, Va.; W. F. Scott, Thomasville, Ga., contractor.

100 tons, school, Hartford, Conn., to Lehigh Structural Steel Co., Allentown, Pa.

Awards Compared

	Tons
Awards, week ended Jan. 16	**19,782**
Awards, week ended Jan. 9	**12,333**
Awards, week ended Jan. 2	**17,107**
Awards, this week in 1931	**27,383**
Av. weekly awards, 1931	**34,236**
Av. weekly awards, 1932	**16,407**
Av. weekly awards, Dec.	**23,286**
Total awards to date, 1931	**83,149**
Total awards to date, 1932	**49,222**

Contracts Pending

3000 tons, building group, University of Texas, Austin, Tex.; bids late in January.

1200 tons, highway bridge over Mississippi river at Savanna, Ill.

650, generator station, Public Service Corp., Kearny, N. J.

600 tons, Fitzgerald hospital, Darby township, Pa.; bids Jan. 26.

500 tons, two buildings for smelting plant, Eagle-Picher Mining & Smelting Co., Picher, Okla.

440 tons, postoffice, Youngstown, O.; A. W. Kutsche & Co., Detroit, contractor. Included, 20 tons of reinforcing steel.

350 tons, galvanized steel airway towers, department of commerce; bids Dec. 22 cancelled, no award to be made.

330 tons, two bridges over railroad tracks, route 2, section 6, Rochelle Park, N. J.; bids Feb. 1, New Jersey state highway commission. A. Lee Grover, chief clerk, Trenton, N. J. About 64 tons of reinforcing bars also required.

300 tons, paint building, DuPont interests, Philadelphia; bids Feb. 1.

275 tons, bridge, Mentor road, Willoughby, O., Lake county; bids Jan. 22, Ohio state highway department, Columbus, O.

250 tons, storage building, Lakehurst, N. J.; bids in.

240 tons, skeleton towers, department of commerce; bids Jan. 22 and 28 with alternaates on larger quantity.

200 highway bridges, Queens (New York).

200 tons, additions, veterans' hospital, Rutland, Mass.

200 tons, addition, state hospital, Elizabethtown, Pa.; bids early February.

196 tons, bridge, over Hudson River Traction Co. tracks and Pleasant avenue, route 2, section 6, Paramus and Rochelle Park, N. J.; bids Feb. 1, New Jersey state highway commission. A. Lee Grover, chief clerk, Trenton, N. J.

170 tons, health center, New York.

150 tons, Woolworth Bros. store, Chestnut street, Philadelphia; bids Jan. 18.

100 tons, approximately, school, Hamilton, O.; F. K. Vaughan Building Co., Hamilton, contractor.

Canadian Iron Output Up In November, Steel Off

November production of pig iron in Canada was 14,292 gross tons, an increase of about 24 per cent over the 11,562 tons of October. This was due to production of 6537 tons of foundry in November, compared with none in October. This more than offset the decline in basic to 7755 tons in November. One 300-ton blast furnace stack was blown in, giving two active stacks at the end of the month. For 11 months pig iron production was 406,176 tons, compared with 709,155 tons in the corresponding period of 1930. It consisted of 306,157 tons of basic, 73,723 tons of foundry and 27,296 tons of malleable iron. Ferroalloy production was 1911 tons in November, mostly ferromanganese.

November steel ingot and castings production was 28,337 tons, compared with 30,926 tons in October, a loss of 8 per cent. For 11 months ingot and castings production was 652,118 tons, compared with 955,642 tons in the corresponding portion of 1930.

Agreeing on New Rates

New York—Carriers in trunk line and central freight association territory are expected to agree to 40 per cent of first class as the basis for publishing commodity freight rates on less-carload shipments of iron and steel articles intraterritorially as well as interterritorially; also to apply on shipments between these territories and New England. Those paying commodity rates would get mostly increases; those paying fourth class rates mostly decreases.

A rich strike of chromium ore is said to have been made near South Pass, in Wyoming, with construction of a reduction mill probable.

Concrete Bars

New York and Boston Awards Improve — Prices Maintained at Chicago—Two 1500-Ton Awards Made —Hint Curtailment at Federal and Other Public Work

REINFORCING BAR PRICES, PAGE 43

New York—Bar prices on larger lots fail to hold at 1.95c, although on smaller tonnages quotations are steadier. Awards include tonnages for two piers and a state hospital at Poughkeepsie, N. Y. Two projects at Washington, more than 800 tons, are placed. McClintic-Marshall Corp., Bethlehem, Pa., is low on an alternate bid for the route 25 viaduct, New Jersey, requiring bar joists.

Boston—Bar awards are heavier, led by about 1500 tons for the Christian Science Publishing Co. building. Several state highway and bridge projects pending for several weeks have also been placed. On tonnage lots, billet bars are fairly steady at 2.15c, with rail steel, 2.00c.

Philadelphia — Reinforcing bar business includes several 100-ton awards. Prices are weak at 1.60c, Pittsburgh, for mill lengths.

Pittsburgh — Prospective work gives a more favorable aspect to the market. Prices show a stronger tone than in merchant bars, usually being quoted 1.60c for mill lengths and 1.75c for cut lengths.

Cleveland—Though plans for several projects are being considered there is little active on which concrete bar fabricators can figure. A school at Hamilton, O., still pending, will require about 100 tons. Another state highway letting is scheduled for Jan. 22. An unstated tonnage is to be bought soon for the Niles, O. bridge.

Chicago—Scattered inquiries are taking shape. Duluth mills have started to roll 9000 tons recently let for 1932 Minnesota highway requirements. Higher prices for billet and rail steel bars, as contained in the cards published for Jan. 1, are being maintained without difficulty.

Awards Compared

	Tons
Awards, week ended Jan. 16	**6,002**
Awards, week ended Jan. 9	**3,315**
Awards, this week, 1931....	**4,464**
Awards, this week, 1931....	**13,554**
Av. weekly awards, 1931	**6,808**
Av. weekly awards, 1932....	**7,658**
Av. weekly awards, Dec.	**4,623**
Total awards to date, 1931	**18,682**
Total awards to date, 1932	**22,975**

Contracts Placed

1500 tons, 1932 Missouri highway commission requirements, to Laclede Steel Co., St. Louis, Sheffield Steel Corp., Kansas City, and several other fabricators.

1500 tons, publishing plant and office structures, Christian Science Publishing Co., Boston, to Truscon Steel Co., Youngstown, O.; Aberthaw Co., contractor.

600 tons, bridge, Sharon-Walpole-Norwood route, state project, Massachusetts, to Northern Steel Co., Boston; Carlo Bianchi & Co. Inc., Framingham, Mass., contractor; Frank Orlando Construction Co., East Boston, Mass., sub-contractor.

500 tons, United States supreme court building, Washington, to Concrete Steel Co., New York; George H. Fuller Co., contractor.

400 tons, Hudson River state hospital, Poughkeepsie, N. Y., to Kalman Steel Corp., Bethlehem, Pa.; Carder Realty Corp., New York, contractor.

385 tons, piers, department of docks, New York, No. 9, West Tenth street, and 107th street, Harlem river, New York, to Joseph T. Ryerson & Son Inc., Chicago; Allen N. Spooner & Son Inc., contractor.

350 tons, pier, Forty-eighth, Fiftieth and Fifty-second streets, New York, to Rawlins Steel Co., New York, through Henry Steers, New York, contractor.

320 tons, buildings, St. Elizabeth hospital, department of interior, Washington, to Buffalo Steel Co., Tonawanda, N. Y.; W. E. O'Neill, Chicago, contractor.

125 tons, state highway, Andover, Mass., to Northern Steel Co., Boston; P. H. Holland Co., Brocton, Mass., contractor.

122 tons, two schools, Mt. Pleasant and Milton, Del., respectively to Concrete Steel Co., New York, and Taylor-Davis Co., Philadelphia.

100 tons, for Lehigh Water Co., Easton, Pa., to Truscon Steel Co., Youngstown, O.

100 tons, research and education hospital, Polk and Lincoln streets, Chicago, to Olney J. Dean Co. and Calumet Steel Co., both of Chicago, and Kalman Steel Corp., Bethlehem, Pa., through Schmidt Bros. Construction Co., Chicago.

Contracts Pending

5000 tons, locks and roller dam, Rock Island, Ill.; general contract tentatively awarded to S. A. Healy Inc., Detroit, low bidder.

1450 tons, archives building, Washington.

400 tons, Monroe street exchange, Illi-

nois Bell Telephone Co.; Lundoff-Bicknell Co., contractor.
200 tons, music hall, Northwestern university, Evanston, Ill.; project postponed.
200 tons, bridge, Grand Central Parkway, Queens (New York).
147 tons, two bridges over railroad tracks, route 2, section 6, Rochelle Park, N. J.; bids Feb. 1, New Jersey state highway commission. A. Lee Grover, chief clerk, Trenton, N. J.
102 tons, school, Hamilton, O.; F. K. Vaughan Building Co., Hamilton, contractor.
100 tons, substructures for three bridges at Joliet, Ill., for Illinois waterway division.
100 tons, pumping station, Easton, Pa.
100 tons, bridge, Pennsylvania railroad, near Trenton, N. J.
100 tons, state bridges, Virginia; bids in.
Unstated tonnage, mail-handling building, Cincinnati Union Terminal, Cincinnati; bids on general contract Jan. 12.
Unstated tonnage, tuberculosis hospital, Hamilton county (Cincinnati); bids on general contract Jan. 18.
Unstated tonnage, Main street bridge, Welland, Ont.; Chadwin Construction Co., Toronto, Ont., low on concrete alternate. Standard Steel Construction Co., Welland, Ont., low on structural steel alternate. Bids being considered.

Semifinished Shipments Light; Prices Easy

Semifinished Prices, Page 50

Pittsburgh—Shipments of semifinished steel still are affected by quiet operations of finishing mills. New business also is dull with consumers disinterested in placing large lots. Prices are not clearly defined, ranging around $27 to $28 for rerolling billets, sheet bars and slabs. Forging billets continue around $34 with wire rods $37.

Youngstown, O.—Billet and sheet bar shipments are near the vanishing point. Some local makers are not making shipments and have only indefinite negotiations pending in a few cases. Nominally the market for billets and slabs is $27, Youngstown, Cleveland and Pittsburgh; and for sheet bars, $26, Youngstown and Cleveland, and $27, Pittsburgh.

Cleveland—Demand for semifinished steel is tending upward, and the leading merchant producer here is likely to increase the number of its active open hearths from four to six this week. Prices continue easy, sheet bars being $26, Cleveland and Youngstown, O.; and billets and slabs, $27.

Falk Cuts Reducers

A lower schedule of prices on various types and sizes of speed reducers has been announced by the Falk Corp., Milwaukee. Price changes apply to all sizes in common use.

Pipe

Washington Buys 4500 Tons Cast Jan. 20—Large Cast Iron Jobs More Numerous

PIPE PRICES, PAGE 54

New York—Bids are postponed on the first of New York city 1932 yard stocks. Pipe and castings total 1120 tons. Inquiry for yard stocks for Brooklyn to have followed has been held up and the status of other borough requirements is uncertain. Prices are the lowest in years. Several heating jobs in the east require fair tonnages of wrought pipe.

Boston—Award of 675 tons of water works castings for Boston has been made. Woonsocket, R. I., is taking bids on water pipe and will specify against low figures. Another municipal inquiry calls for 350 tons of 8-inch cast.

Pittsburgh—Makers are optimistic regarding line pipe business during the coming year but look for few immediate inquiries. Demand for other tubular products continues at its recent quiet rate.

Chicago—Minneapolis board of public works is in the market for 2500 to 2700 tons of steel or cast pipe, bids to be submitted by Jan. 20. Milwaukee will close Jan. 22 on 1700 tons of 12 and 16-inch cast, and special castings. Cincinnati has received bids on 2000 tons of 6, 8 and 12-inch cast. Prices are nominal.

Birmingham, Ala.—Shop backlogs are not being built up rapidly with operation about 30 per cent. Base price is reported at $33 on 6-inch and over.

Cast Pipe Placed

639 tons, Kalispell, Mont., to National Cast Iron Pipe Co., Birmingham, Ala.
600 tons, 60-inch, cast iron submarine outlet sewer, section D, Sawmill, North and Central Yonkers project, N. Y., to United States Pipe & Foundry Co., East Burlington, N. J.; Merritt-Chapman & Scott Corp., contractor.

Cast Pipe Pending

4500 tons, 36 to 48-inch, alternate bids on 2685 tons, cast iron or concrete, with fittings, district commissioners, Washington, Jan. 20.
2000 tons, 6, 8 and 12-inch for Cincinnati; bids Jan. 13.
1700 tons, Milwaukee; 1200 tons 12-inch, 500 tons 16-inch, 115 tons specials and 31 tons offset, 6 to 16-inch diameters; bids close Jan. 22.
1120 tons, including 455 tons, 6 to 20-inch, cast iron pipe; 594 tons of special castings; 70 tons high pressure special castings, hydrants and valves; department of purchase, New York; inquiry withdrawn. Bids later.
420 tons, 20-inch, Somerville, N. J.; alternate bids on concrete.
400 tons, 24 and 30-inch, Minneapolis; bids Jan. 20.
Unstated tonnage for Duluth; formal inquiry soon.

Steel Pipe Placed

300 tons, wrought iron, mostly 10-inch standard, heating, Bronx county courthouse, Bronx (New York), to A. M. Byers Co., Ambridge, Pa., and Reading Iron Co., Reading, Pa.; J. L. Murphy Co., contractor.

Steel Pipe Pending

35,000 tons, 20-inch line pipe, 200 mile line; inquiry issued at New York for unstated buyer.
700 tons, 8 to 16-inch, black wrought iron pipe, mainly class B, extra strong, for Panama; bids Jan. 25. Also 13,500 feet, 6-inch, galvanized wrought iron or steel, malleable iron fittings, cast iron fittings, cast steel flanges and gate valves, No. 2718.
Unstated tonnage, 1200 feet, 30-inch i. d. shore pipe, United States engineer, Wilmington, N. C.; bids in.
Unstated tonnage, 2310 steel boiler tubes, navy, Norfolk, Va.; National Tube Co., Pittsburgh, low; 302 corrosion resistant steel tubes, Globe Steel Tubes Co., Milwaukee, low.
Unstated tonnage, 48-inch, filtration plant, Lancaster, Pa.; bids in Jan. 14.
Unstated tonnage, 33,500 feet, 32 to 44-inch steel pipe, Minneapolis; bids Jan. 20.

U. S. Engineers Buy Steel

Washington—Awards for the United States engineer at the following points are announced:

Pittsburgh: 53,779 pounds round soft steel bars, Lockhart Iron & Steel Co., Pittsburgh, 1.81c.

Cincinnati: 9875 pounds shafting, Jones & Laughlin Steel Corp., Pittsburgh, 4.35c and 3.1c.

Vicksburg, Miss.: 6000 feet ¾-inch wire rope, Wire Rope Corp. of America Inc., New Haven, Conn., $810.

Jacksonville, Fla.: 10,000 feet ⅞-inch wire rope, Durable Wire Rope Co., Boston, 38.00c.

Ask Gross Ton Surcharge

New York—Surcharges on bulk commodities like scrap, iron ore and pig iron, effective Jan. 4 on freight rates as an emergency aid to railroad revenue, should be extended to apply on gross tons as well as net tons, shippers claim, planning to ask the interstate commerce commission to make the change in the interest of simplification.

Strip

Small Lots for Immediate Delivery Make Most of Present Demand—Prices Not Strong

STRIP PRICES, PAGE 43

Pittsburgh—A slight gain in strip specifications the past week failed to raise demand above the December rate. Automotive companies are cautious in forward buying but hope is placed on coming releases of the Ford Motor Co. in stimulating activity in the industry. Orders from other consumers also are slow to improve. Prices range from 1.50c to 1.60c for narrow hot strip and 1.40c to 1.50c for wide material. On cold-rolled strip 2.10c has disappeared and although occasional reports of 1.90c are heard the general minimum is 1.95c. Strip mill operations lack improvement at around 25 per cent.

Philadelphia—Strip is quiet with hot-rolled holding at 1.45c and 1.55c, Pittsburgh, for wide and narrow, respectively. Cold-rolled is 2.00c to 2.05c, Pittsburgh.

Youngstown, O.—Immediate delivery is the feature of orders for strip placed this year. Orders are almost always for small lots. Irregularity of operation of automotive consumers contributes to a spotty demand on mills.

Cleveland—The greatest price unsettlement in many years continues in hot-rolled strip. When attractive tonnages appear quoted prices mean nothing. On small job lots one maker received business at 1.50c and 1.60c, base, for wide and narrow last week. Some partsmakers who received Ford business last week quoted so low on the latter that their steel purchases apparently will have to be seconds, even in the present price on primes. Cold-rolled is dull at 2.00c to 2.10c, Cleveland.

Chicago—Hot-rolled narrow strip is quoted 1.60c to 1.70c, Chicago; wide is 1.50c to 1.60c. Operations are 20 to 25 per cent.

New York—Strip is easier, hot-rolled being 1.40c to 1.45c, Pittsburgh, for wide and 1.50c to 1.55c for narrow. Cold-rolled is easy at 2.00c to 2.05c, Pittsburgh. Trading is spotty.

Operations Gain One Point; Now at 26 Per Cent

Youngstown, O.—Steel operations averaged 32 per cent last week, unchanged from the prior week, and were expected to show a narrow gain at the current week's opening. This anticipated advance may be extended due to expected gains in pipe and tin plate activity. Twenty-one of 68 open-hearth furnaces are melting and two of three bessemer plants are operating part time. An idle seamless mill is expected to resume shortly.

Buffalo—Steelworks will probably drop operations four to five points this week to about 20 per cent capacity. Rate during the week ending Jan. 16 was 24 per cent, up eight points from the prior week. There were nine open hearths making steel here last week.

Philadelphia — Steel operations at 17 per cent were fractionally higher last week. Little immediate change is expected.

Pittsburgh—Ingot production has increased slightly to 25 per cent. Only a mild additional gain is in prospect for the coming week. Blast furnace schedules are unchanged with 10 steelworks stacks active of 54. Finishing mill operations are unchanged at 25 to 30 per cent for sheets, and 25 for strip and pipe. Tin plate output is slightly lower at 40.

Operations, week of Jan. 16	**26**
Operations, week of Jan. 9	**25**
Operations, week of Jan. 2	**20-24**
Operations, this week, 1931	**45**
High, 1931-32 (March 19)	**57**
Low, 1931-32 (Dec. 26)	**15-20**

Cleveland—Steel production advanced three points last week to just over 35 per cent. The 32 per cent rate of the week before had been continues for five consecutive prior weeks. For this week the operating rate will be at 41 per cent, representing 14 active open hearths among the four steel plants of the district.

Chicago—Schedules for this week indicate ingot production slightly under 20 per cent, the same as last week, which was down two points from the prior week. Steelworks blast furnaces are unchanged with nine of 36 stacks in. Rail mill operations are declining, while moderate gains exist in sheet mill operations. One producer's plate mill will be down entirely for a few days.

Birmingham, Ala.—With ten open-hearth furnaces of 18 in operation for Tennessee Coal, Iron & Railroad Co. and three of six for Gulf States Steel Co., all on intermittently, operations last week were at 60 per cent capacity. Most of these furnaces are of 140-ton daily capacity. The 60 per cent rate is expected to hold this week.

Warehouse Prices Cut on Sheets in Some Centers

Warehouse Prices, Page 54

New York—Gain in orders since Jan. 1 has been slight. Prices are easy, notably on sheets in combination orders.

Philadelphia — Jobbers have reduced galvanized sheets $5 a ton to 3.75c. Hot-rolled annealed sheets have been reduced $3 a ton to 3.40c. Demand is dull.

Pittsburgh—Sales show little additional improvement following moderat recovery after the holidays. Some price shading is noted.

Cleveland—No. 24 hot-rolled annealed sheets have been reduced to 3.25c base for shipment from warehouse.

Cincinnati — Volume continues light, with quotations unchanged.

Chicago—Sales this month have continued to grow. Improvement toward the middle of January was not expected until later and shipments are expected to be 5 to 10 per cent over December.

St. Louis—Cutting and burning extras have been adopted by local jobbers. Moderate betterment in demand for steel from stock has developed since the first week of January. Base quotations are unchanged.

Cold-Finished Business Still Far From Active

Cold Finished Prices, Page 43

Pittsburgh—Shipments of cold-finished steel bars show only a slight gain over the December rate and improvement is substantially less than would be expected on the basis of the usual trend. Automotive companies are slow to issue large releases. Specifications from other consumers remain quiet. The market continues 2.00c, Pittsburgh.

Cleveland—The base of 2.00c, Cleveland, is unchanged for the orders for cold-finished steel bars which are received from time to time. Trading is far from active.

Raw Material Prices

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago furnace	$16.50
Pittsburgh, dist. fur.	16.50 to 17.00
Pittsburgh, delivered	17.13 to 18.13
Valley furnace	15.50 to 16.00
Cleveland fur., local del.	16.00
Philadelphia, delivered	15.26 to 15.76
Virginia furnace	17.50
Granite City, Ill., fur.	17.50
Buffalo, fur., local del.	16.00
Buff., all-rail, Boston	19.91 to 20.41
Buff., all-rail, Brooklyn	19.15 to 19.90
Buff., all-rail, Newark	17.53 to 18.28
Ala., Bir. fur., local del.*	12.00
Ala., Nor. del., Bir. base	10.00
Alabama, del. Chicago	16.01
Alabama, del. St. L.	14.42
Alabama, del. Cincinnati	13.82
Ala., Phila., dock del.	15.00 to 15.25
Ala., Balt., dock del.	15.00
Alabama, New York dock	15.50
Ala., Boston dock del.	16.50 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	13.82
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	16.50
Buff., all-rail, Brooklyn	19.90 to 20.40
Buffalo, all-rail Newark	18.28 to 18.78
Buff., all-rail, Boston	20.91 to 21.41
Virginia furnace	18.00
Eastern, del. Phila.	15.76 to 16.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	17.50
Eastern, del. Phila.	16.26 to 16.76

MALLEABLE

Valley furnace	16.00 to 16.50
Cleveland fur., local del.	16.00
Pittsburgh dis. fur.	16.50 to 17.00
Pittsburgh, delivered	17.13 to 18.13
Chicago, furnace	16.50
Buffalo fur., local del.	15.50 to 16.00
Eastern Penna., delivered	17.76 to 19.91
Granite City, Ill., fur.	17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	15.50 to 16.00
Pittsburgh, delivered	16.13 to 17.13
Eastern Penn., del.	16.00 to 16.50
Buffalo fur., local del.	15.50 to 16.00
Montreal, delivered	23.50
Valley, furnace	15.00

BESSEMER

Valley furnace	16.00 to 16.50
Pittsburgh, delivered	17.13 to 18.13
Pittsburgh, furnace	16.50 to 17.00

LOW PHOS.

Valley fur., standard	27.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	15.50
Pittsburgh district fur.	16.00 to 16.50
Pittsburgh, delivered	16.63 to 17.63

CHARCOAL

Lake Superior, del. Chicago	23.04

SILVERY

Jackson County, O., fur. in per cents: 6—$19; 7—$19.50; 8—$19.00 to $21.00; 9—$20.50; 10—$21; 11—$22; 12—$23; 13—$25.

BESSEMER FERROSILICON

Jackson County, O., fur. in per cents: 10—$23; 11—$24; 12—$25; 13—$27; 14—$29; 15—$31; 16—$33.

Coke

Prices Per Net Ton

Beehive Ovens

Connellsville furnace	$2.25 to 2.35
Connellsville foundry	3.25 to 4.50
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.76 to 9.16
Chicago, ovens	7.50
New England, del.	10.50
St. Louis, del.	8.50
Birmingham, ovens	4.50
Indianapolis, del.	8.32
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens Connell., basis	5.50
Buffalo, ovens	8.00 to 8.50
Detroit, ovens	8.00
Philadelphia, del.	8.75

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	9.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% man.	9.50 to 10.00
North African low phos.	8.00 to 9.00
Swedish basic, 65%	8.00
Swedish low phos.	9.00
Spanish, North African basic, 50 to 60%	7.00 to 8.50
Newfoundland fdy., 55%	8.00
Tungsten, spot and future short ton unit, duty paid	$11.00
Chrome ore, 48% net ton c.i.f.	$18.00 to 19.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	26 cents
South African, 52%	23 to 24 cents
South African, 49-51%	22 to 23 cents
South African, 44-47%	21.00 to 21.50
Indian, 48-50%	nom.
Brazilian, 46-48% (nom.)	nominal

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$38.00
Missouri	35.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 30.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	38.00
Joliet, Ill., East Chicago, Ind.	47.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	$65.00

CHROME BRICK

Per Net Ton

F.o.b. shipping point	$45.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Balt. base, 9 x 4½ x 2½	45.00

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$27.00 to 28.00
Pittsburgh, bessemer	27.00 to 28.00
Youngstown	27.00
Cleveland	27.00
Philadelphia	33.75 to 34.75
Chicago	29.00
Forging, Chicago	35.00 to 36.00
Forging, Pittsburgh	34.00 to 35.00
Forging, Philadelphia	39.75

SHEET BARS

Pittsburgh	27.00 to 28.00
Youngstown	26.00
Cleveland	26.00
Chicago	29.00

SLABS

Pittsburgh	27.00 to 28.00
Youngstown	27.00
Cleveland	27.00

WIRE RODS

Pittsburgh, Cleveland	$37.00
Chicago	36.00 to 38.00

SKELP

All grades, Pittsburgh	1.50c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$75.00
*Ferromanganese, del. Pittsburgh	79.85½
Spiegeleisen, 19-20%, domestic fur. spot†	27.00
Ferrosilicon, 50 per cent, freight all., c. l.	77.50
Do, less carload	85.00
Do, 75 per cent	126.00 to 136.00
Silicomang., 2½% carb.	105.00
2% carbon	110.00
1% carbon	115.00
(Spot prices, $5 a ton higher.)	
Ferrochrome, 60-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Do, for spot delivery	10.50
Ferrotungsten, stand., lb. cont.	1.10 to 1.20
Ferrovanadium, 30-40 per cent, per lb. contained, on analysis	3.05 to 3.30
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis, (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50
Ferromolybdenum, stand. 50-60 per cent. per lb.	0.95
Cal. Molybdate, lb. cont.	0.80

†Carloads. Differentials apply to quant.
*To users of carloads to 1000 tons annually. Differentials to large users.

Fluorspar

85 and 5 per cent grade

Washed gravel Kentucky, Illinois mines, net ton	$13.00
Washed gravel, import duty paid tide. gross ton	13.50

Pig Iron

Larger Orders in Lakes District Follow General Motors' Buying —Shipments Gaining

PIG IRON PRICES, PAGE 50

Pittsburgh—Pig iron business holds at the dull rate of the preceding several weeks. Orders usually call for only single carloads and are for immediate requirements, with practically no interest displayed in future buying. Foundry operations show no additional improvement following a slight upturn after the holiday period and iron consumption by other users is quiet and unchanged. On current business prices of $15.50 to $16, valley, for No. 2 foundry, $16 to $16.50 for bessemer and malleable and $15 for basic usually apply.

Boston—Low prices for foreign iron have tended to unsettle the Boston market. Dutch iron at Providence is reported moving at $17, delivered. A textile interest took 2000 tons. Shipments in this territory are slightly heavier. New England iron is reported selling at $17.50 to $18, furnace, with some at $17. Not much better than $19 is being done on the limited volume of Buffalo iron.

Philadelphia—Apart from a recent purchase of 500 to 1000 tons of malleable by an eastern Pennsylvania consumer, reported placed with a Buffalo furnace, the market is devoid of tonnage. On the light volume of business eastern Pennsylvania foundry iron is quoted usually at $15, furnace.

Witherbee, Sherman & Co., Port Henry, N. Y., blew out a furnace Jan. 11 for two months.

Buffalo—A much improved local district buying situation has developed within the past week. While orders are not large they are numerous and shipments are better than they have been at any time in recent months. Prices are steady.

Youngstown, O.—Reports persist that Carnegie Steel Co. will put the blast on an Ohio works stack this month, the last two stacks active in this group being banked the middle of December. The only active merchant furnace here is shipping a few carloads occasionally. Quotations are unchanged.

Cleveland—General Motors' order for 100,000 tons of pig iron, reported last week, undoubtedly has tended to strengthen confidence in the market and in the year's business prospects. New sales by lake furnace interests rose at once, and for the week exceeded 10,000 tons, the largest for any similar period since last fall. Buyers appear in a more receptive mood. An Indiana melter now is in the market for 1200 tons; a southern consumer is inquiring for 1000 tons, and an inquiry from northern Ohio is for 1000 tons; numerous others are for fill-in lots up to several hundred tons. Shipments are picking up moderately. Prices range generally from $15 to $15.50, base, lake furnaces, for shipments outside furnaces' local territories. Cleveland makers hold to $16, base, furnace, for local delivery.

Cincinnati—Reduction of $1 a ton on southern pig iron, making the local delivery price $13.82 so far has not brought heavier orders although several important tonnages are pending. Northern iron was in better demand during the past week, with one sale of 550 tons to a central Ohio melter. An inquiry for 1000 tons in southern Ohio is current.

Chicago—January pig iron shipments continue to gain. Thus far they are about 15 per cent ahead of December. The nominal $16.50 Chicago base still remains untested as to quantity orders. Southern iron, now on a $10 Alabama furnace base, is moving fairly steadily to Michigan automotive casting shops.

St. Louis—The reduction to $10, base, Birmingham, has not stimulated sales, but has increased feeling of uncertainty. Some foundries preferred to have the price held at $11 having castings and finished products made up with the higher priced material. The leading local producer and other northern furnaces have not changed their quoted figures but are meeting competition. A moderate improvement is noted in inquiry.

Birmingham, Ala.—Shipments of iron out of this territory have increased, due mainly to the reduction of $1 a ton to $10 for northern delivery. The price in the local territory remains $12.

Toronto, Ont.—Sales in this district in the past week amounted to less than 300 tons. Melters, continuing to operate at a low rate, show no interest in future requirements. Prices are steady.

Minimum specifications for adequate wiring of lighting circuits in industrial structures have been published by the commercial national section of the National Electric Light association, 420 Lexington avenue, New York, as a guide to architects, engineers and builders in making plans for electrical installations.

Ferroalloy Shipments Improve Moderately

Ferroalloy Prices, Page 50

Pittsburgh—Shipments of ferromanganese and spiegeleisen have improved moderately since the first of the year as a result of the slight upturn in open-hearth operations. Specifications still are at a slow rate, however, reflecting the quietness in steel making. The spot market is dull with prices for small lots continuing $75 for ferromanganese and $27 for spiegeleisen. Specifications for other ferroalloys are quiet and show but little improvement since Jan. 1. Prices are unchanged.

New York—While fair business for some grades of ferroalloys is reported by certain sellers, the general tone of the market is slow. One leading seller, however, reports orders are more numerous. Prices are unchanged.

Chicago—Contracts for next year's ferroalloys requirements are proceeding, and many of the regular buyers already have closed. Shipments are more restricted because of the continued low steelworks operations in this district.

Refractory Sales Are Slow, Prices $5 Below Year Ago

Refractories Prices, Page 50

Pittsburgh — Sales of refractory brick continue slow, December business marking the lowest level of the year. Prospects for improvement this quarter depend largely upon operations in the iron and steel industry. Considerable furnace and heating equipment is in need of repair but steel interests are doing only necessary work. Only a limited number of idle open-hearth furnaces are in condition to resume operations.

First quality fire clay brick is $38 in all states except Missouri where the market is $35. Silica brick is $38, Pennsylvania, $47 at Joliet, Ill., and East Chicago, Ind., and $50, Birmingham. Second quality fire clay brick, which has been $25 to $35, now is $25 to $30. These prices are $5 below a year ago. Prices on other refractories are unchanged at $65 for magnesite brick and $45 for chrome brick.

Scrap

Better Buying Develops, Giving Strength Though Prices Change Little—Activity Is Spotty

Chicago—Due to the placing of a small order of heavy melting steel at $7 to an independent steelworks melter, new weakness is discerned in the scrap price trend. It is expected the next quantity sales will be above $7.50, gross, delivered. As the $7 order was for shipment under less rigid specifications than for the more general requirements, this order is not clearly indicative. Dealer interests are resisting the tendency toward easier prices for steelmaking grades. The Gary melter is about to place a melting steel order. A sale of about 3000 tons of No. 1 cast scrap has been closed by an open-hearth melter in the district at $7.25 gross, Chicago switching district, about 75 cents lower than recently quoted prices. As this was charging

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	6.50 to 7.50
Boston, dealers	4.00 to 4.50
Buffalo, No. 1	8.00
Buffalo, No. 2	6.25 to 6.50
Chicago	7.00 to 7.50
Cinci., deal.	6.75 to 7.25
Cleve., No. 1	7.25 to 7.75
Cleve., No. 2	7.00 to 7.50
Det., No. 1 deal.	5.50 to 6.00
Det., No. 2 deal.	4.00 to 4.50
E. Pa. del. mill	7.00 to 8.00
N. Y. deal. R. R.	4.50 to 5.50
N. Y. deal. No. 2	3.50 to 4.00
N. Y. deal. yd.	3.50 to 4.00
Pitts. No. 1	10.00 to 10.50
St. L. No. 1 sel.	7.00 to 7.50
Federal, Ill.	6.50 to 7.00
Granite City, Ill.	6.00 to 6.50
Valleys, No. 1	9.00 to 9.50

COMPRESSED SHEETS

Buffalo, dealers	6.25 to 6.50
Chi. (Factory)	5.75 to 6.25
Cleveland	7.00 to 7.25
Detroit, dealers	5.50 to 6.00
E. Pa. new mat.	6.50 to 7.50
Pittsburgh	9.75 to 10.25
Valleys	8.25 to 8.75

BUNDLED SHEETS

Buffalo	5.50 to 5.75
Cinci., deal.	6.25 to 6.75
Cleveland	6.00 to 6.50
Eastern Pa.	5.50 to 6.00
Pittsburgh	9.25 to 9.75
St. Louis	3.50 to 4.00

SHEET CLIPPINGS LOOSE

Chicago	3.75 to 4.25
Cincinnati	3.50 to 4.00
Detroit, dealers	3.00 to 3.50
St. Louis	3.50 to 4.00

STEEL RAILS SHORT

Birmingham	10.00 to 11.00
Boston, dealers	4.25 to 4.75
Buffalo	10.00 to 11.00
Chicago (3 ft.)	8.75 to 9.25
Chicago (2 ft.)	9.75 to 10.25
Cinci., deal.	12.00 to 12.50
Detroit, deal.	10.50 to 11.00
Pitts. (open-hearth, 3 ft. and less)	12.00 to 12.50
St. Louis	11.00 to 11.50

STOVE PLATE

Birmingham	6.50 to 7.00
Boston, con.	4.50 to 5.00
Buffalo	8.50 to 8.75
Chicago, net	6.00 to 6.50
Cinci., deal. net	4.50 to 5.00
Det., net deal.	3.00 to 3.50
Eastern Pa.	7.00
N. Y., deal. mill	4.50 to 5.00
St. Louis	6.50 to 7.00

COUPLERS, SPRINGS

Buffalo	10.00 to 11.00
Chicago	8.50 to 9.00
Eastern Pa.	9.00 to 10.00
Pittsburgh	10.75 to 11.25
St. Louis	8.00 to 8.50

ANGLE BARS—STEEL

Chicago	8.00 to 8.50
St. Louis	7.00 to 7.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	11.00 to 11.50
Cleveland bil. and bloom crops	14.00 to 14.50
Eastern Pa.	12.00
Pittsburgh billet bloom crops	14.00 to 14.50
Pitts., sheet bar crops	13.00 to 13.50

FROGS, SWITCHES

Chicago	7.75 to 8.00
St. Louis	7.50 to 8.00

SHOVELING STEEL

Chicago	7.50 to 8.00
Cleveland	6.25 to 6.50
St. Louis	6.50 to 7.00

RAILROAD WROUGHT

Birmingham	7.00 to 7.25
Boston, dealers	7.00 to 7.50
Buffalo, No. 1	6.25 to 6.50
Buffalo, No. 2	8.00 to 8.25
Chicago, No. 1	7.25 to 7.85
Chicago, No. 2	7.50 to 8.00
Cinci., No. 2	6.75 to 7.25
Eastern Pa.	9.00 to 9.50
N. Y., No. 1, deal.	6.00 to 6.50
Pitts., No. 2	10.00 to 10.50
St. Louis, No. 1	4.50 to 5.00
St. Louis, No. 2	6.50 to 7.00

SPECIFICATION PIPE

Boston	4.00 to 4.25
Eastern Pa.	9.00 to 10.00
N. Y., deal.	5.00 to 5.50

BUSHELING

Buffalo, No. 1	6.25 to 6.50
Chicago, No. 1	5.50 to 6.00
Cinn., No. 1 dl.	5.00 to 5.50
Cinn., No. 2	3.50 to 4.00
Cleve., No. 2	4.25 to 4.50
Det., No. 1 new deal.	4.50 to 5.00
St. L., No. 1	5.00 to 6.50
Val. new No. 1	8.50 to 9.00

MACHINE TURNINGS

Birmingham	3.00 to 3.50
Boston, dealers	1.05 to 1.55
Buffalo	4.75 to 5.25
Chicago	4.00 to 4.50
Cinn., deal.	3.25 to 3.75
Cleveland	4.00 to 4.50
Detroit	3.00 to 3.50
Eastern Pa.	4.50
N. Y., deal.	1.35 to 1.50
Pittsburgh	7.00 to 7.50
St. Louis	2.50 to 3.00
Valleys	6.50 to 7.00

BORINGS AND TURNINGS For Blast Furnace Use

Boston, dealers	1.25 to 1.50
Buffalo	6.00 to 6.25
Cinn., deal.	3.25 to 3.75
Cleveland	4.25 to 4.75
Detroit, deal.	3.50 to 4.00
Eastern Pa.	3.00 to 3.50
N. Y., deal.	1.35 to 1.50
Pittsburgh	6.75 to 7.00

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	3.00 to 3.50
Boston, chem.	6.50 to 7.25
Boston, deal.	1.05 to 1.55
Buffalo	6.00 to 6.25
Chicago	3.00 to 3.50
Cinn., deal.	3.25 to 3.75
Cleveland	4.25 to 4.75
Detroit, deal.	3.50 to 4.00
Eastern Pa.	3.00 to 3.50
E. Pa., chem.	10.50 to 12.00
N. Y., deal.	1.50 to 2.00
Pittsburgh	6.75 to 7.00
St. Louis	5.00 to 5.50

PIPE AND FLUES

Cinn., deal.	6.00 to 6.50

RAILROAD GRATE BARS

Buffalo	5.50 to 6.00
Chicago, net	5.75 to 6.25
Cincinnati	5.50 to 6.00
Eastern Pa.	7.00
N. Y., deal.	5.00 to 5.50
St. Louis	5.75 to 6.25

FORGE FLASHINGS

Boston, deal.	5.00 to 5.25
Buffalo	6.25 to 6.50
Cleve. ov. 10 in.	7.00 to 7.50
Detroit	4.75 to 5.25

FORGE SCRAP

Boston, deal.	1.50 to 2.00
Chicago	10.50 to 11.00
Eastern Pa., del.	6.75

ARCH BARS, TRANSOMS

Chicago, net	8.50 to 9.00
St. Louis	6.50 to 7.00

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	7.00 to 7.50
Chi., steelworks	6.00 to 6.50
Cleveland	6.75 to 7.00
Eastern Pa. del.	7.00 to 8.00
Pittsburgh, O. H.	8.75 to 9.25
St. Louis	5.00 to 5.50

STEEL CAR AXLES

Birmingham	11.50 to 12.00
Boston, ship. pt.	11.00 to 11.50
Buffalo	12.00 to 12.50
Chicago	12.25 to 12.90
Eastern Pa.	14.50 to 15.00
St. Louis	11.50 to 12.00

SHAFTING

Bos., ship. pt.	10.00 to 10.50
Chicago	7.85 to 8.40
N. Y., deal.	9.00 to 9.50
St. Louis	8.50 to 9.00
E. Penna.	15.00 to 15.50

CAR WHEELS

Birming. iron	8.00 to 9.00
Boston, iron	11.00 to 12.00
Buffalo, iron	9.50 to 10.00
Buffalo, steel	10.00 to 10.50
Chicago, iron	8.00 to 8.50
Chi., rolled steel	8.50 to 9.00
Cincinnati, iron	9.50 to 10.00
E. Pa. steel	9.00 to 10.00
E. Pa. iron	10.00 to 11.00
Pitts. iron	10.00 to 10.50
Pitts., steel	10.75 to 11.25
St. Louis, iron	7.00 to 7.50
St. Louis, steel	6.50 to 7.00

NO. 1 CAST SCRAP

Birmingham	8.50 to 9.00
Buffalo (Mach.)	9.25 to 9.75
Boston, textile	7.00 to 8.50
Chicago, mach.	8.90 to 9.50
Chi., railroad	8.10 to 8.70
Chicago, agri.	7.50 to 8.10
Cinn., mach. cup, gross	10.00 to 10.50
Cleve. cupola	10.00 to 10.50
Det., net deal.	8.00 to 8.50
E. Pa. cupola	10.50 to 11.50
N. Y. cup. deal.	7.00 to 7.50
N. Y., del. local foundries	11.00
Pitts., cupola	10.00 to 10.50
San Fran., del.	13.50 to 14.00
Seattle	5.00 to 7.50
St. L. No. 1 ma.	7.00 to 7.50
St. L., No. 1	6.50 to 7.00

HEAVY CAST

Boston	6.00 to 6.50
Bost. mach. cast	8.00 to 9.00
Buffalo, break.	5.50 to 6.00
Cleve., break	6.00 to 6.50
Detroit, auto, net deal.	10.00 to 10.50
Det., break., dl.	4.75 to 5.25
Eastern Pa.	9.00 to 9.50
N. Y. break, dl.	5.75 to 6.00
N. Y. No. 1 dl.	7.00 to 7.50
Pittsburgh	8.00 to 8.75

MALLEABLE

Boston R. R.	11.50 to 12.00
Buffalo	9.50 to 10.00
Chicago, agri.	7.00 to 7.50
Chicago, R. R.	7.00 to 7.50
Cinci., R. R. del.	9.25 to 9.75
Cinci., agri. del.	9.00 to 9.50
Cleveland, rail	10.00 to 10.50
Det. auto deal.	9.00 to 9.50
St. Louis, rail	5.50 to 6.00

RAILS FOR ROLLING 5 feet and over

Birmingham	10.00 to 10.50
Boston, deal.	6.00 to 7.00
Buffalo	8.50 to 9.50
Chicago	10.50 to 11.00
Eastern Pa.	10.50 to 11.50
New York	6.25 to 6.75
St. Louis	9.00 to 9.50

LOCOMOTIVE TIRES

Chicago, cut	10.00 to 10.50
St. L., No. 1	8.00 to 8.50

LOW PHOS. PUNCHINGS

Chicago	10.00 to 10.50
Buffalo	10.00 to 11.00
Eastern Pa.	12.00
Pittsburgh	11.00 to 11.50

box and not cupola size, the sale does not come under ordinary market conditions for that grade. The only railroad scrap offering pending is 3000 to 4000 tons by the Burlington railroad on Jan. 20. Inquiries from foundries are lighter than a few weeks ago.

Boston—Scrap shipments are light but prices on several cast grades are steadier. Heavy melting steel is $6.50, Worcester, with little shipped there or to outside points, freight rates operating against the latter.

New York—Scrap shipments are light, several consumers in the east having held up shipments. The firmer trend at Pittsburgh has had a steadying influence.

Shipments of bundled scrap to Bethlehem, Pa., mills have been held up and where shippers must unload the material has been diverted to Sparrows Point, Md.

Philadelphia — Although largely nominal some further reductions have been made in scrap prices. Business is mostly scattered carloads with some melters still suspending shipments.

Buffalo—Bethlehem Steel Co. has suspended all shipments of scrap from Buffalo and presumably from nearby dealers.

Some No. 1 machinery cast has been sold at above $9.50 a ton, it is claimed. Stove plate also has brought fully as much as early in the fourth quarter. Dealers' prices, which are largely nominal, are tending toward greater firmness as a result.

Pittsburgh—The scrap market has a stronger tone as the result of additional buying of heavy melting steel, totaling around 10,000 tons, over the past several days. This material brought $10.50 and is the heaviest buying in more than a month. Due to the recent inability of dealers to pick up much material as less than $10 a stronger situation exists as a result of this buying. Other grades are quiet and generally unchanged but more active demand is in prospect over the next few weeks.

Cleveland—With deliveries nearly completed on contracts of a local mill dealers believe important tonnages must be negotiated soon. Deliveries unchanged.

Detroit — Demand from outside steel mills and a disposition on the part of dealers to cover on short orders have firmed the iron and steel scrap market considerably in the past week. Machine shop turnings have been increased 25 cents on the spread and the market looks for most prices to be up at least 50 cents a ton by this week.

Cincinnati—An important consumer who placed an embargo on scrap shipments several months ago is again accepting a limited tonnage. Activity remains light, with quotations nominal.

St. Louis—Cuts in iron and steel scrap prices are general and business continues at a slow pace. Virtually all grades were affected by the declines, the exceptions being heavy melting steel, stove plate, busheling and short rails. The market for steel is extremely quiet and prices depend largely upon what dealers will pay for material to lay down in their yards.

Birmingham, Ala. — What little scrap is moving is for immediate use. Melters are buying in as small quantities as possible.

Toronto, Ont.—General business conditions in the iron and steel scrap markets are unchanged. Consumers are taking scrap for immediate use only. Dealers also are out of the market. Little scrap is being offered. Prices are unchanged.

Canadian Scrap

Dealers' Buying Prices

Per Gross Ton

MONTREAL

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Expands at Buffalo

Buffalo—Joseph T. Ryerson & Son Inc. have purchased the stock, good will, etc., of the steel department of the H. D. Taylor Co., large Buffalo wholesale house, as of Jan. 15. The stock acquired includes hot and cold rolled bars, shapes, plates, sheets, etc., which will be added to the Ryerson stock here. The Taylor company is planning considerable expansion in its mill supply and general wholesale business.

Three plants of the Universal Atlas Cement Co., subsidiary of the United States Steel Corp., at Northampton, Pa., Leeds, Ala., and Independence, Kans., went through 1931 without a lost-time accident.

Coke

Foundry Requirements Expand In Some Districts — Furnace Grade Remains Quiet

COKE PRICES, PAGE 50

Pittsburgh—Foundries are slow to increase requirements of coke and as a result of poor demand for the blast furnace grade and quietness in demand for domestic heating fuel the market lacks improvement. Prices generally are steady at $3.25 to $2.35 for furnace coke and $3.25 to $4.50 for the foundry grade.

New York—Demand for metallurgical coke is improved slightly, reflecting better foundry operations. Prices are unchanged.

Cincinnati — Without much increase in the general foundry melt, shipments of by-product, foundry coke in this district are improved, chiefly through demand from special industries. Quotations at $9.06, delivered Cincinnati, reflect the new freight increase.

Chicago—Addition of the freight surcharge brings the Chicago delivered price of by-product foundry coke to $8.31, as against $8.25. The oven price remains at $7.50. January shipments are gaining moderately. Contracting for 1932 is nearly completed.

St. Louis—By-product coke producers report the smallest volume of advance ordering of any comparable period in recent years. Foundries are buying from time to time in the open market; only in rare instances are contracts being placed.

Birmingham, Ala.—Shipments are not equal to production which continues at 50 per cent. A little coke is leaving the district. Reports are vague as to orders for first quarter.

Molybdenum Corp. of America is producing daily about 40 tons of sulphide molybdenum at its Questa, N. Mex., mine.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel			Iron	
In.	Blk.	Gal.	In.	Blk.	Gal.
½	58	44½	½	23	5
¾	62	50½	¾	28	11
1—3	64	52½	1—1¼	31	15
			1½—2	35	18

LAP WELD

2	57	45½	2	23	9
2½—6	61	49½	2½—3½	28	13
7—8	58	45½	4—6	30	17
9—10	56	43½	7—8	29	16
11—12	55	42½	9—12	26	11

BUTT WELD

Extra strong, plain ends

½	55	44½	¼ & ⅜	+13	+48
¾	60	49½	½	23	7
1—1½	62	51½	¾	28	12
2—3	63	52½	1—2	34	18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29	13
2½—4	59	48½	2½—4	34	20
4½—6	58	47½	4½—6	33	19
7—8	54	41½	7—8	31	17
9—10	47	34½	9—12	21	8
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. Direct mill shipments, base, 5 and 2½. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload discounts, f.o.b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½ 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir. ....$33.00 to 35.00
Four-inch, Birmingham .... 37.00 to 39.00
Four-inch, Chicago ..... 43.40 to 44.40
Six to 24-inch, Chicago..... 40.40 to 41.40
Six-inch and over, N. Y..... 28.00 to 30.00
Four-inch, New York ..... 34.50 to 36.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS

Baltimore	3.00c
Boston	3.25c
Buffalo	3.00c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	2.65c
Los Ang.	3.40c
New York‡(d)	3.10c
Philadelphia	2.60c
Pittsburgh	2.60c
Portland	2.50c
San Fran.	2.40c
Seattle	2.50c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS

Baltimore	3.25c
Boston	3.25c
Buffalo	3.15c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.60c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS

Baltimore	2.50c-3.31c
Boston	3.25c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los Ang. cl.	2.50c
Los Ang. lcl.	2.80c
New York	2.65c-3.10c
Phila.	2.40c-3.00c
Pittsburgh	2.60c
San Fran. cl.	2.60c
San Fran. lcl.	2.90c
Seattle	2.50c
St Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore	3.00c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los Ang.	3.40c
New York(d)	3.10c
Philadelphia	2.50c
Pittsburgh	2.85c
Portland	2.50c
San Fran.	2.40c
Seattle	2.50c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

PLATES

Baltimore	3.00c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New York(d)	3.30c
Philadelphia	2.50c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	2.50c
San Fran.	2.40c
Seattle	2.50c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

NO. 10 BLUE

Baltimore	3.25c
Boston	3.50c
Buffalo	3.50c
Chattanooga	3.50c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.35c
Los Ang.	3.95c
N. Y. (d)	3.00c-3.40c
Portland	3.50c
Phila.*† (e)	3.05c
Pitts.**	3.00c to 3.10c
San Fran.	3.65c
Seattle	3.50c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.70c

NO. 21 BLACK

Balt.*†	3.50c
Boston	4.20c
Buffalo	3.70c
Chattanooga	3.65c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.25c
Detroit	3.50c
Los Ang.	4.70c
New York	3.50c-3.65c
Phila.*†(e)	3.40c
Pitts.**	3.40c
Portland	4.00c
San Fran.	4.15c
Seattle	4.00c
St. Louis	3.80c
St. Paul	3.545c
Tulsa	4.75c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	4.75c
Buffalo	4.10c
Chattanooga	3.95c
Chicago	4.10c
Cincinnati	4.25c
Cleveland	3.75c
Detroit	4.00c
Houston	4.25c
Los. Ang.	5.10c
New York	4.00c-4.10c
Phila.*†(e)	3.75c
Pitts.**	3.90c
Portland	4.50c
San. Fran.	4.65c
Seattle	4.50c
St. Louis	4.35c
St. Paul	4.23c
Tulsa	5.10c

BANDS

Baltimore	3.50c
Boston	3.75c
Buffalo	3.35c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	4.30c
New York(d)	3.40c
Philadelphia	2.90c
Pittsburgh	2.95c
Portland	3.50c
San Fran.	3.75c
Seattle	3.50c
St. Paul	3.75c
Tulsa	3.45c

HOOPS

Baltimore	3.50c
Boston	4.90c-5.40c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.75c
Cleveland	3.55c
Det. No. 14 & lighter	3.65c
New York	3.75c
Philadelphia	3.15c
Pittsburgh	3.60c
Seattle	4.90c
St. Paul	3.75c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.75c
Chicago	3.10c
Cincinnati	3.50c
Cleveland	3.10c
Detroit	3.40c
Los Ang. (a)	4.50c
New York	3.30c
Philadelphia*	3.30c
Pittsburgh	3.10c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.50c
St. Paul (a)	3.85c
St. Louis	3.35c
Tulsa	4.65c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)	5.65c
Cincinnati	5.80c
Cleve. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(b)Net base straightening, cutting, boxing 1 ton or more.

(c)Plus mill, size and quantity extras.

(d)Minus quant. diff.

(e)New mill classif.

‡Domestic bars.

*Plus quan. extras.

**Less than 25 sheets.

*†50 or more bundles.

Pacific Coast

New Business Slow to Develop —Slow Bond Market Holds Back Public Work—Canadian Tariff Excludes Pipemakers from That Market—Municipal Pipe Needs Smaller Than Usual

Seattle—The new year has not developed increased inquiry for iron and steel products in the Pacific Northwest. Specifications are coming out slowly, municipal projects being hampered by inability to sell bonds, while industrial demand continues dormant. Mill prices are holding steady in the face of poor turnover.

Of 27,190 tons of pipe sold in the Pacific Northwest last year, British Columbia absorbed 8318 tons, all booked by Canadian, British or Continental manufacturers. American makers are barred from this market by duties and exchange. In Seattle and Tacoma, French manufacturers sold 3159 tons, all municipal requirements. In addition to being barred from British Columbia and facing competition of foreign material, agents of Atlantic coast and gulf manufacturers face a prohibitive railroad back-haul from Coast ports into the interior. This situation gives interior mills almost a clear field in eastern Washington, Oregon, Idaho and Montana.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

Bars, Plates and Shapes

There is no improvement in demand for merchant and reinforcing materials. Both local mills are temporarily closed. Recent sales are in lots of less than 100 tons and only unimportant tonnages are pending.

No new inquiries involving plates have developed, local plants being short of work. The only job pending involves 200 tons of plates for the West Seattle overflow pipe job, subcontract to be awarded next week.

Fabricating plants are reasonably busy but new work is slow in developing. Several state bridges are to be up for figures soon but specifications are not out. After long delay, bids for the University bridge, Seattle, approaches about 1800 tons, are called for Jan. 29. An unstated manufacturer has the contract for structurals for the federal building at Helena, Mont.

Finished Materials

Wholesale jobbers report no improvement. The local price structure is being held at minimums established two months ago. Cutting is again reported in Portland territory where on Jan. 1 the larger houses again attempted to peg prices at what were considered reasonable levels.

Pipe Releases Are Slow

Specifications are being released slowly and inquiry is less than at this time last year. Municipal requirements are in smaller tonnages, reflecting financial stringency. Some good orders are in prospect but have not been released. Yakima, Wash., plans to expend $80,000 soon for a 24-inch trunk cast iron extension.

Obituaries

(*Concluded from Page* 15)

A native of Scotland, Mr. Lindsay with the assistance of Alexander Winton and others, organized the company bearing his name following his invention of a machine for weaving wire cloth. He was chairman of the board of the Niagara Wire Weaving Co., Niagara Falls, Ont., and president of Liberty Reed Co., Cleveland.

□ □ □

William D. Pomeroy, 57, vice president and general manager of Gould Pumps Inc., Seneca Falls, N. Y., died Jan. 6 at Seneca Falls.

□ □ □

W. Alexander Williamson, 79, president of the C. T. Williamson Wire Novelty Co., Newark, N. J., died Jan. 3 at Newark.

□ □ □

Walter Manning Jr., traffic manager of the Rainey Coke Co., New York, subsidiary of Alan Wood Steel Co., Conshohocken, Pa., died Jan. 7, at the Naval hospital, Brooklyn, N. Y., where he had been under treatment for three months for the effects of gas poisoning suffered while serving overseas in the World war. His home was in Elizabeth, N. J.

□ □ □

Albert W. McKinney, for 36 years assistant treasurer of the former Kelly & Jones Co., Greensburg, Pa., and now the Walworth Co., Boston, died at Greensburg recently.

□ □ □

George H. Thompson, 63, president of the Columbus Malleable Iron Co., Columbus, O., died at Columbus, Jan. 11. He had been associated with the company since he moved to Columbus from Hoosick Falls, N. Y., 21 years ago.

□ □ □

James F. Walsh, 47, vice president of the Moline Iron Works, Moline, Ill., and manager of the Elkhart, Ind., division of the Chicago Hardware Foundry Co., Chicago, died Jan. 11 at Oak Park, Ill.

□ □ □

Edward C. Dunmeyer, 69, one of the organizers of Diamond Chain & Mfg. Co., Indianapolis, died at Indianapolis recently. For many years he had been vice president of the company.

□ □ □

Jordon Lawrence Mott, 76, son of the founder of the Jordon L. Mott Iron Works Inc., and former president of the company, died Jan. 6, at Nelson harbor, Bahamas, B. W. I. After completing his education he entered the employ of the Mott Iron Works and after the death of his father in 1915 served as president until his retirement several years ago.

□ □ □

Charles L. Rogers, 72, former president of the Sligo Furnace Co., St. Louis, and associated in an executive capacity with the American Car & Foundry Co., New York, for 35 years, died recently at Atlantic City, N. J. Mr. Rogers retired from active business four years ago, and has since divided his time between St. Louis and California.

Let's Ride to Prosperity!

"Let's ride out of the valley" is the catchphrase of Charles R. Hook, president, American Rolling Mill Co., Middletown, O., who says: "Let's face the economic situation with a new faith, that if every one who needs and can buy a new automobile, new refrigerator, or a new anything and will do so, the increased prosperity from such a concerted movement will more than pay each one of us individually for that purchase. Let's use the marvelous modern automobile to ride out of the valley of depression on to the broad highway of better times."

Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 7.25c, Conn., for copper

Sheets	
Yellow brass (high)	13.37½
Copper, hot rolled	16.62½
Lead sheets, to jobbers	6.75
Zinc sheet (100-lb. base)	9.00
Tubes and Pipes	
Seamless yellow brass (high)	16.62½
Seamless copper	16.12½
Rods	
Yellow brass (high, full turnings)	11.12½
Naval brass	12.25
Anodes	
Copper untrimmed	14.12½
Wire	
Yellow brass (high)	13.37½

Old Metals

Dealers' buying prices, cents lb.

No. 1 Composition Red Brass	
New York	4.25 to 4.50
Chicago	3.62½ to 4.12½
Cleveland	4.25 to 4.75
St. Louis	3.50
Heavy Yellow Brass	
New York	2.75 to 3.00
Heavy Copper and Wire	
New York	5.25 to 5.50
Boston	5.00 to 5.25
Chicago	4.12½ to 4.37½
Cleveland	4.50 to 5.00
St. Louis	3.75
Composition Brass Borings	
New York	4.00 to 4.25
Yellow Brass Tubing	
Cleveland	2.75 to 3.25
Light Copper	
New York	4.25 to 4.50
Chicago	3.50 to 4.00
Cleveland	3.75 to 4.25
St. Louis	3.50
Light Brass	
Boston	1.75 to 2.00
Chicago	2.37½ to 2.62½
Cleveland	1.75 to 2.25
St. Louis	2.00
Zinc	
New York	1.00 to 1.25
Cleveland	1.00 to 1.25
St. Louis	1.50
Aluminum	
Clippings, new, soft, Cleve.	11.00 to 11.50
Clippings, hard, Cleveland	7.50 to 8.50
Borings, Cleveland	3.00 to 3.25
Mixed cast, Cleveland	4.00 to 4.25
Mixed cast, Boston	3.25 to 3.50
Mixed cast, St. Louis	3.50 to 4.00

Secondary Metals

Remelt aluminum No. 12	8.50 to 9.50
Brass ingots, 85-5-5-5	7.25

Metals

Further Advance in Copper Is Feature of Market—Zinc Eases But Lead and Tin Are Steady

New York—Advance of ¼-cent in the price of copper last week was the outstanding development in the metal market. Straits tin prices strengthened, but zinc was easy. Lead retained recent steadiness; aluminum and antimony were unchanged.

Copper—Despite the advance in copper early last week to 7.50c, Connecticut, domestic consumers continued to show little interest. Foreign buyers, however, came into the market for increased tonnage, sales this month to date aggregating about 10,000 tons. On one or two days last week some custom smelters offered metal at as low as 7.25c but returned generally to the 7.50c figure when the lower prices failed to stimulate business. Brass and copper products were increased ⅛ and ¼-cent, respectively, last week. Brass ingot advanced ⅛-cent. The copper industry has improved its position through agreement on curtailment of production and on marketing rules.

Lead—Sales last week were the largest for any similar period in two months. Producers booked tonnages from a diversified list of consumers for both January and February delivery. January needs are estimated to be more than 75 per cent covered but a large amount of buying for February remains to be done.

Zinc—Prices were easy last week with metal for delivery through February available at 3.00c, East St. Louis, Friday. Many sellers remained out of the market entirely. Sales were light. A leading steel interest is reported to have covered on a large tonnage at 3.00c, East St. Louis.

Tin—Demand was light during the week but prices firmed up, due largely to advance in sterling exchange. Quotations, however, have been under the level of importers' costs and have been based on resale transactions.

Antimony—Demand continues of recent dull proportions. Prices have shown little fluctuation.

Aluminum—Quotations remain unchanged with buying generally light. The European cartel has reduced prices £5 a ton.

Distillate Prices Are Firm; Sales Light

New York—Demand for distillates is light, but prices are firm. With limited supplies, distributors feel that an increase in toluol and benzol might be attained. Lacquer interests are buying toluol in fair shipments, but in general demand is not active. Phenol is unchanged with shipments holding well. Naphthalene shipments against contracts are picking up slowly. Sulphate of ammonia is weak.

Coke By-Products

	Spot
Per Gallon, Producers' Plants, Tank Lots	
Pure benzol	$0.20
90 per cent benzol	0.20
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants in	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.10 to $1.20

Quicksilver Quiet

New York — Quicksilver demand continues quiet with most sellers quoting $65 to $67 a virgin flask of 76 pounds. Some asking prices range up to $68 a virgin flask in small lots, while a few large orders have been sold recently as low as $64. November imports have been reported by the department of commerce as nil. Total imports during the first 11 months of 1931 were 27,054 pounds against 208,486 pounds in the corresponding period the year preceding.

Prices of the Week, Cents a Pound

	Copper: Electro delivered	Copper: Lake delivered	Copper: Casting refinery	Straits Tin New York: Spot	Straits Tin New York: Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
January 9	7.25	7.37½	7.00	21.87½	22.40	3.75	3.55	3.05	22.90	6.00	35.00
January 11	7.50	7.62½	7.25	21.87½	22.40	3.75	3.55	3.05	22.90	6.00	35.00
January 12	7.50	7.62½	7.25	22.00	22.45	3.75	3.55	3.05	22.90	6.00	35.00
January 13	7.50	7.62½	7.25	21.70	22.25	3.75	3.55	3.05	22.90	6.00	35.00
January 14	7.50	7.62½	7.25	21.70	22.65	3.75	3.55	3.05	22.90	6.00	35.00
January 15	7.50	7.62½	7.25	22.37½	22.90	3.75	3.55	3.00	22.90	6.00	35.00

Europe

British Tin Plate Expects Aid From Canadian Tariff—December Pig Iron Production Gains

London—(*By Radio*)—Markets are dull in all products except tin plate. Some tin plate mills are reopening since the new Canadian tariff against imports from the United States is expected to increase demand on South Wales trade. The Shell Oil Co. has placed an order for 800,000 base boxes of tin plate from that source.

Some inquiries for rails have been received by Sheffield producers from the Chinese government. Demand for light castings is increasing among Midland foundries. Workington Blast Furnace Co. has completed its new stack, which is electrically operated.

December pig iron production was 330,600 tons from 70 stacks, a daily average of 10,664 tons, compared with November production of 296,400 tons from 70 stacks, a daily average of 9880 tons. Steel ingot and castings production was 422,400 tons, daily average 13,626 tons, compared with 459,200 tons in November, a daily average of 15,370 tons. Iron and steel imports were 266,901 tons, compared with 379,363 tons in November and exports were 175,256 tons, compared with 195,703 tons in November.

Berlin reports markets are unsatisfactory, troubles in the Far East impeding trade. Brussels sees slight improvement, especially in South American markets. Paris finds severe competition from Belgian producers. French steelmasters have united to control output, regulate sales and strengthen comptoirs.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Jan. 14

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	
PIG IRON	£ s d		£ s d	£ s d
Foundry, 2.50-3.00 Silicon	$10.15	2 18 6	$ 9.96 to $10.45	2 1 0 to 2 3 0
Basic bessemer	9.72	2 16 0*	9.18 to 9.72	1 19 0 to 2 0 0
Hematite, Phos. .03-.05	11.28	3 5 0	.....	.....
SEMIFINISHED STEEL				
Billets	$18.65	5 7 6	$11.66 to $11.91	2 8 0 to 2 9 0
Wire rods, No. 5 gage	29.50	8 10 0	24.30 to 25.52	5 0 0 to 5 5 0
FINISHED STEEL				
Standard rails	28.63	8 5 0	$28.55	5 17 6
Merchant bars	1.09c	7 0 0	.58c to .59c	2 13 0 to 2 14 0
Structural shapes	1.20c	7 15 0	.57c to .58c	2 12 0 to 2 13 0
Plates, †¼-in. or 5mm	1.36c	8 15 0	.72c to .73c	3 5 0 to 3 6 0
Sheets, black, 24 gage or 0.5 mm.	1.36c	8 15 0	1.51c to 1.54c	6 17 6 to 7 0 0
Sheets, gal., 24 gage, corr.	1.41c	9 2 6	1.54c	7 0 0
Bands and strips	1.47c	9 10 0	.83c to .85c	3 15 0 to 3 17 6
Plain wire, base	1.32c	8 10 0	1.18c	5 7 6
Galvanized wire, base	1.71c	11 0 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	1.71c	11 0 0	1.21c	5 10 0
Tin plate, box 108 lbs.	$ 2.52	0 14 6	$3.20	0 13 2‡

British ferromanganese $72 to $75 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d	French Francs		Belgian Francs		Renten Marks
Fdy. pig iron, Si. 2.5	$10.15	2 18 6	$ 9.60	245(2)	$10.56	380	$16.42	69
Basic bessemer pig iron	9.72	2 16 0*	.....	.....	10.01	360	17.97	75.50
Furnace coke	2.17	0 12 6	5.68	145	4.45	160	5.09	21.40
Billets	18.65	5 7 6	14.11	360	11.68	420	23.68	99.50
Standard rails	1.28c	8 5 0	1.41c	785	1.57c	1,210	1.37c	127
Merchant bars	1.09c	7 0 0	.90c	500	.65c	500	1.24c	115
Structural shapes	1.36c	8 15 0	.99c	550	.65c	500	1.22c	112.50
Plates, †¼-in. or 5mm	1.40c	9 0 0	1.17c	650	.79c	605	1.43c	132
Sheets, black, 24 ga. or 0.5mm.	1.36c	8 15 0	1.77c	985	1.56c	1,200	2.75c	255
Sheets, galv., corr., 24 ga. or 0.5mm	1.43c	9 5 0	2.39c	1,325	1.95c	1,500	4.43c	410
Plain wire	1.32c	8 10 0	1.62c	900	1.95c	1,500	2.24c	207
Bands and strips	1.47c	9 10 0	1.04c	575	.92c	710	1.44c	133

*Basic. †British ship-plates, Continental bridge plates. ‡German.
British quotations are for basic open-hearth steel, Continental usually for basic-bessemer steel.

British Steel Market Has Need of More Business

Birmingham, Eng.—Pig iron stocks have increased over the holiday but prior to Christmas a fair number of deliveries had taken place and furnacemen, a number of whom have contracts booked well into first quarter view the position hopefully. Having stabilized prices some months ago prospects are reasonably good, especially for the light castings trade.

The Central Pig Iron Producers association met at the end of the year and left prices undisturbed. Iron is being sold at £3 2s 6d ($10.62) for Northampton No. 3 foundry and £3 6s ($11.22) for Derbyshire delivered at Black Country stations. Forge iron is 5s ($0.85) less in each case but there is little inquiry, consumption of forge iron in South Staffordshire having fallen substantially in recent years.

Fresh inquiry for Continental steel is small. Prices are low when compared with English quotations but there were heavy imports in the late autumn and consumers are still taking deliveries against contracts placed then. English steelworks are quoting £8 ($27.20) a ton for steel arches used in collieries and there has been a fairly good demand in recent weeks. Holders of steel scrap are inclined to conserve their material until better prices are available.

Competition for Finished Iron

Staffordshire finished iron is a dull market. At some mills making best bars the holiday was short but in other branches mills were idle all the week. There is keen competition for business in crown iron and prices vary between £9 5s ($31.45) and £9 15s ($33.15). Marked bars are unchanged at £12 ($40.80) a ton and iron strip costs £10 12s 6d ($36.12) delivered.

A reduction of 10s ($1.70) a ton has been made in the basis of Scottish malleable iron. Crown quality iron bars will now be £9 15s ($33.15) a ton delivered Glasgow stations. The previous change in the price was made in 1927. In that year there were successive reductions from £11 15s ($39.95) to £10 5s ($34.85). Shipments of pig iron from Glasgow last week comprised 187 tons to foreign destinations and five tons coastwise. A year ago the corresponding figures were 996 and 29 tons.

In the Welsh tin plate trade the position is similar to that prevailing in the last few weeks of the old year but the recent improvement in prices is maintained at 14s 3d ($2.42) to 14s 9d ($2.50) and the volume of inquiries is said to be substantial.

Machinery

REPORTS from the New York automobile show are encouraging to those builders of production machine tools whose future is intimately bound up with that of the automobile industry. In the meantime, release of considerable plant equipment business depends upon public reaction to 1932 cars. Automobile manufacturers are known to have set up extensive new equipment schedules which will be rushed into effect if and when definite need for increased production becomes apparent. If one representative company initiates the movement, others immediately will follow suit, according to seasoned observers of industrial trends.

New York—Machine tool buying and inquiry are limited at this time to a few scattered items. The general situation shows but little change since the recent flurry of automotive business. Machine tool builders who were fortunate enough to get in on these automotive equipment schedules continue to place a few more tools.

While the sum total of this business represents the most significant movement in new machinery in many months, it was not well spread among machine tool builders, comparatively few participating in it.

Manufacturing schedules are slow to improve. Consolidation of divisions of several companies in the East may result in some machine tool inquiries later on. Navy department has bids on more than 20 tools for yards in various parts of the country.

Among these are: Six engine lathes for New York or San Francisco; three swing lathes for Hampton Roads; two engine lathes and one milling machine for Puget Sound; one bolt threading machine for Washington; one shaper and one power press brake for Philadelphia; and drills and other miscellaneous tools for several other yards.

Worcester, Mass.—No large volume of inquiry and no active demand for machine tools is evident in any section of the domestic market, according to Worcester authorities. Aside from the business placed by Ford Motor Co. some time ago, conditions remain about as they were. The Ford company continues to purchase single units, mostly special.

Government policy of hesitation in awarding lathe contracts continues to keep that market in dull condition. It appears that in such awards as have been made of late, New England builders have not fared so well as have those in the Middlewest.

Reports from metalworking plants, particularly from those in the Middlewest, indicate that inventories are down to extraordinarily low levels. This is expected to insure decidedly active production as soon as buying activity becomes noticeable.

Pittsburgh—Dealers are receiving occasional orders for individual machine tools, the total of this business representing little change from the volume of the past 30 days. Inquiry is quiet and little change in the amount of pending work is noted.

Few inquiries are appearing from steel companies, although it is reported that Carnegie Steel Co. plans to initiate major improvements at several local plants in the spring. Westinghouse Electric & Mfg. Co. is buying but little equipment.

Cleveland—With the opinion generally expressed by machine tool builders that upon the automotive industry depends the immediate future of their business, it is obvious why they have observed the effect of the automobile show in New York with close attention. Several who have attended seem encouraged by public reaction to new models.

While automobile production has not stirred up any large machine tool orders here since the first of the year, it has given decided impetus to parts makers and to machine tool builders who have diversified their lines by making automotive parts and accessories. One such company has received a substantial release on shock absorbers for Ford.

Chicago—No appreciable improvement is indicated in the machine tool market. Possibilities of additional purchases by Studebaker Corp. still are in the future. They hinge upon success of the company's new car. An excavator equipment maker has a small inquiry out for its southern Indiana plant.

The outlook in the farm equipment industry is far from encouraging. It is said that one harvester company that has been operating since late November on a partial scale may go down entirely in March.

An active railroad equipment market is not likely for several months, despite recent progress toward upbuilding of railroad financial credit.

Aside from used tools, sales in the last week have been negligible. Trade-in possibilities are fairly promising. One order for about $5000 in used tools recently was closed.

Navy Soon Will Close Bids On Two Floating Cranes

Washington—Bids close Feb. 3 with the chief, bureau of yards and docks, navy department, for two 25-ton floating revolving boom cranes at the destroyer base, Mare Island, Calif., and for San Diego, Calif.

Each of these units will consist of a revolving boom crane mounted on a steel pontoon with a main hook capacity of 50,000 pounds at 55-foot radius, 40,000 pounds at 70-foot radius, and an auxiliary hook capacity of 10,000 pounds at 75-foot radius.

The cranes will be operated by diesel-electric power. The specifications state that the pontoons shall be not less than 44 x 100 feet. A steel house is to be provided on each crane over the machinery.

William Gleason Memorial Is Unveiled at Rochester

On the evening of Dec. 29 a bronze tablet bearing a bas-relief portrait of William Gleason (1836-1922) was unveiled in the lobby of Gleason Works, Rochester, N. Y., of which he was the founder. The tablet was unveiled by George Hunter, oldest living employe of the company, who was associated with Mr. Gleason continuously from 1880 until 1924.

Prior to the unveiling, Miss Eleanor Gleason recalled in a brief biographical sketch the long and interesting life of her father. This pioneer machine tool builder was born in Tipperary county, Ireland, came with his mother to Canada when he was 13, and moved to Rochester two years later.

He began his mechanical career as a helper in a small machine shop in Rochester owned by Asa R. Swift, later serving an apprenticeship in the shop of I. Angell & Son. Leaving Rochester, he spent several years at the Colt Armory and with Pratt & Whitney, Hartford, Conn. He returned to Rochester in 1865, where he started a toolmaking shop.

In 1875 he built his first gear cutting machine, which was the beginning of an industry which today occupies a modern machine tool plant covering 22 acres.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

BIDDEFORD, ME.—Saco-Lowell Shops, manufacturer of textile machinery, plans to consolidate its plant at Newton Upper Falls, Mass., with the Biddeford works and will make alterations and extension to cost about $500,000.

New York

BROOKLYN—Surplus Products Corp. has been incorporated with $10,000 preferred stock and 100 shares common stock to manufacture wireless equipment, by D. L. Sprung, 295 Madison avenue.

BUFFALO—Metal Spinning Co. has been incorporated with $10,000 capital and 100 shares no par value to manufacture metal goods, by R. H. Mahaney, Buffalo.

GLENS FALLS — American Paper Machinery & Engineering Works has been incorporated with $60,000 capital, by McPhillips, Fitzgerald & McCarthy, Glens Falls.

NEW YORK—Fortschritt Skiving Machine Corp. has been incorporated with $5000 capital to manufacture machinery and tools, by D. S. Kumble, 1328 Broadway.

NEW YORK—Electro Thermal Products has been incorporated with $20,000 capital to manufacture electric generators, by L. Himmelfarbe, 1440 Broadway.

NEW YORK—Talley Register Co. has been incorporated with 2500 shares common stock to manufacture counting devices, by Bonynge & Barker, 115 Broadway.

NEW YORK—Arctic Chemical & Combustion Engineering Co. has been incorporated with 300 shares common stock by J. P. Nolan, 60 Broad street.

NEW YORK—Mugler's Architectural Iron Corp. has been incorporated with $10,000 capital by H. Lehrich, 67 West Forty-fourth street.

New Jersey

BAYONNE—New Jersey Cornice & Skylight Works Inc. has been incorporated with 2000 shares common stock to carry on a roofing and tinsmithing business, by Louis Divock, Bayonne, N. J.

CAMDEN—Camden Wire Co., 108 Chambers street, New York, is having plans made for rebuilding and repairing its plant, following a fire, to cost $40,000.

JERSEY CITY—Jersey City Welding & Machine Works, 394 Grand street, is having plans drawn for a 2-story plant, to cost $40,000.

JERSEY CITY—Barney D. Singer, architect, 921 Bergen avenue, is making plans for a 1-story addition to a machine shop to cost $40,000, owner not disclosed.

JERSEY CITY—Oscar Schmidt-International Corp. has been incorporated with $250,000 preferred stock and 2000 shares common stock to manufacture talking machines, pipe organs and other musical instruments, by Charles H. Blohm, 286 Central avenue, Jersey City, N. Y.

MONTCLAIR—Oiljak Mfg. Co. has been incorporated with $50,000 capital to manufacture hydraulic screw, worm and other jacks and auto accessories, by Harry B. Epstein, 68 William street, New York.

NEWARK—Electro Fire Detector Co. Inc. has been incorporated with 2000 shares common stock to manufacture fire detectors, by Israel B. Breene, Newark, N. J.

NEWARK—Irvington Steel & Iron Works has been incorporated with 1000 shares common stock, by Abraham Gurney, 1060 Broad street, Newark, N. J.

NEWARK—Newark Ladder & Bracket Co. Inc. has been incorporated to manufacture equipment for masonry erection, with $100,000 capital, by Sosnow & Grunt, 810 Broad street, Newark, N. J.

Pennsylvania

PHILADELPHIA—Giles Dyeing Machinery Co. has been incorporated with a Delaware charter, capital $20,000 and 1000 shares common stock, to manufacture machinery used in dyeing, bleaching and cleaning, by Corporation Guarantee & Trust Co., Wilmington, Del.

PHILADELPHIA—William Boekel & Co. Inc. has been incorporated with $200,000 capital to manufacture chemical, bacteriological and surgical equipment, plumbing supplies and other appliances, by Julius Boekel, 3224 North Seventeenth street, Philadelphia.

PITTSBURGH—Royal Electric Products Corp. has been incorporated with $10,000 capital to manufacture and deal in electrical and mechanical devices and equipment, by Salvatore Profeta, treasurer, 2661 Beechwood boulevard, Pittsburgh.

Ohio

PIQUA—L. G. Whitney, city manager, is having plans made by Burns & McDonnell Engineering Co., Interstate building, Kansas City, Mo., for a municipal light and power plant to cost $800,000. Plans will be ready in spring.

Southern States

WASHINGTON — Bureau of supplies and accounts, navy department, will open bids Jan. 26 for the following machinery: Schedule 7218, one 18 x 72-inch motor-driven, selective head, engine lathe; Schedule 7223, one 24-inch motor-driven engine lathe; Schedule 7225, one direct motor-driven ball bearing, single surface planer; Schedule 7227, one sander with three drums, 2, 3 and 4 inches diameter, steel disk 30 inches diameter, dust chute and metal guard; bids closing Feb. 2, Schedule 7240, one 12 x 40-inch centers universal grinding machine, with motors and spindles and side mill grinding attachment.

Missouri

CARTHAGE—Standard Machine Mfg. Co. plans to rebuild its burned plant.

ST. LOUIS—Claymots & Helnecks, contractors, St. Louis, has been given a contract by the St. Louis Cooperage Co. for rebuilding its plant at Brinkley, Ark., which burned in August. Plans include duplex dry kiln, sawmill and boiler house and equipment, to cost about $150,000.

Wisconsin

BELOIT—Beloit Iron Works will build a 2-story addition to its pattern shop at a cost of $40,000.

Pacific Coast

SEATTLE — Fisher-Mifflin Chemical Co., 443 Central building, has been incorporated with $50,000 capital, by K. R. Fisher and M. G. Scott. A plant will be built at Tacoma, Wash.

Dominion of Canada

CALGARY, ALTA.—Federal Oil & Refineries Ltd., St. John, N. B., has been incorporated with $1,500,000 capital to build a refinery here with capacity of 1500 to 2000 barrels.

VANCOUVER, B. C.—Greater Vancouver water district board is considering bids for 4400 feet of 10 and 12-inch wire-wound wood stave pipe.

BURLINGTON—Skagit County Dairymen's association will build a milk-drying plant, to cost $45,000, including a Gray-Jensen spray plant.

BURLINGTON, ONT.—Niagara Brand Spray Co. has given a contract to Slater & Copp, Waterdown, Ont., for its new plant, of steel and brick, which will cost about $50,000. (Noted Dec. 28.)

CHATHAM, ONT.—R. W. Walsh Co. has bought a site and will build a new woodworking plant to replace the one recently burned. Boilers and other powerplant equipment will be installed.

TORONTO, ONT. — Marvo Electric Heaters Ltd. has been incorporated with $100,000 capital and 50,000 shares no par value to manufacture electric appliances, by William L. Clark, Toronto.

CAP DE LA MADELEINE, QUE.—A. Plamondon, 30 James street west, Montreal, Que., consulting engineer, has recommended to the city council the purchase of a 100-gallon per minute centrifugal pump, directly connectetd to a 100-horsepower motor; two 700-gallons per minute centrifugal pumps, connected to 50-horsepower motors; three Sterling gasoline motors, 225-horsepower. R. Rocheleau is city clerk.

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271 of 100 Tons Capacity and over

LADLE AND STANDARD CRANES

59		100 tons
2	WORM DRIVEN Ladle,	100 tons
2		115 tons
6	WORM DRIVEN Ladle,	125 tons
45		125 tons
30		150 tons
3	WORM DRIVEN Ladle,	150 tons
6	WORM DRIVEN Ladle,	160 tons
2	WORM DRIVEN Ladle,	165 tons
4	WORM DRIVEN Ladle,	175 tons
27		175 tons
3	WORM DRIVEN Ladle,	200 tons
4		200 tons
5		225 tons
1		250 tons
3	WORM DRIVEN Ladle,	250 tons
3	WORM DRIVEN Ladle,	275 tons
1		275 tons
1		300 tons
3		430 tons

STRIPPING CRANES

8		100 tons
1		125 tons
21		150 tons
19		200 tons
1	Single Ram,	320 tons

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1		125 tons
3		150 tons
4		200 tons

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